

# Agriculture and Food Research Initiative Competitive Grants Program

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## Foundational Program

**FY 2014 Request for Applications**



United States  
Department of  
Agriculture

National Institute  
of Food and  
Agriculture

**NATIONAL INSTITUTE OF FOOD AND AGRICULTURE  
U.S. DEPARTMENT OF AGRICULTURE**

**AGRICULTURE AND FOOD RESEARCH INITIATIVE  
COMPETITIVE GRANTS PROGRAM  
FOUNDATIONAL PROGRAM**

**INITIAL ANNOUNCEMENT**

**CATALOG OF FEDERAL DOMESTIC ASSISTANCE:** This program is listed in the Catalog of Federal Domestic Assistance (CFDA) under 10.310.

**DATES:** Applications must be submitted via Grants.gov by 5:00 p.m. Eastern Time (ET) on the deadline date indicated in the Program Area Descriptions section beginning in Part I, C. See Part IV, F “Other Submission Requirements” for a full description of what it means to submit an application on time. Applications received after the deadline will normally not be considered for funding. Comments regarding this request for applications (RFA) are requested within six months from the issuance of this notice. Comments received after this date will be considered to the extent practicable.

**STAKEHOLDER INPUT:** The National Institute of Food and Agriculture (NIFA) seeks your comments about this RFA. We will consider the comments when we develop the next RFA for the program, if applicable, and we'll use them to meet the requirements of section 103(c)(2) of the Agricultural Research, Extension, and Education Reform Act of 1998 (7 U.S.C. 7613(c)(2)). Submit written stakeholder comments by the deadline set forth in the DATES portion of this notice: Policy and Oversight Division; Office of Grants and Financial Management; National Institute of Food and Agriculture; USDA; STOP 2299; 1400 Independence Avenue, SW; Washington, DC 20250-2299; or via e-mail to: [Policy@nifa.usda.gov](mailto:Policy@nifa.usda.gov) (this e-mail address is intended only for receiving comments regarding this RFA and not for requesting information or forms). In your comments, please state that you are responding to the fiscal year (FY) 2014 Agriculture and Food Research Initiative Foundational Program RFA. Stakeholder comments received in response to the FY 2011 Foundational Program RFA and FY 2012 Challenge Area RFAs are discussed in Part I, B. of this RFA.

**EXECUTIVE SUMMARY:** The U.S. Department of Agriculture (USDA) established the Agriculture and Food Research Initiative (AFRI) under which the Secretary of Agriculture may make competitive grants for fundamental and applied research, education, and extension to address food and agricultural sciences (as defined under section 1404 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA) (7 U.S.C. 3103)), as amended, in six priority areas. The six priority areas include: 1) plant health and production and plant products; 2) animal health and production and animal products; 3) food safety, nutrition, and health; 4) renewable energy, natural resources, and environment; 5) agriculture systems and technology; and 6) agriculture economics and rural communities.

The National Institute of Food and Agriculture is currently operating under temporary appropriations as part of the Continuing Resolution (CR) providing funds through January 15, 2014. Based on the current CR, NIFA anticipates the amount available for the AFRI program in FY 2014 will be approximately \$275 million. Adjustments will be made to program allocations once the FY 2014 appropriations are finalized. Of this amount, no less than 30 percent will be made available to fund integrated research, education, and extension programs.

For FY 2014, it is anticipated that approximately \$82 million will be made available to support new awards within the AFRI Foundational Program Area. This RFA focuses on building a foundation of knowledge in fundamental and applied food and agricultural sciences critical for solving current and future societal challenges.

Project types supported by AFRI within this RFA include single-function Research Projects, multi-function Integrated Projects, and Food and Agricultural Science Enhancement (FASE) Grants. This RFA identifies the research and integrated program objectives for AFRI Foundational Program projects, the eligibility

criteria for projects and applicants, matching requirements for each project type, and the application forms and associated instructions needed to apply for an AFRI Foundational Program grant.

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## **PART I – FUNDING OPPORTUNITY DESCRIPTION**

### **A. Legislative Authority and Background**

Section 7406 of the Food, Conservation, and Energy Act of 2008 (FCEA) (Pub. L. 110-246) amends section 2(b) of the Competitive, Special, and Facilities Research Grant Act (7 U.S.C. 450i(b)) to authorize the Secretary of Agriculture to establish the Agriculture and Food Research Initiative (AFRI); a competitive grant program to provide funding for fundamental and applied research, education, and extension to address food and agricultural sciences. Grants shall be awarded to address priorities in United States agriculture in the following areas:

1. Plant health and production and plant products;
2. Animal health and production and animal products;
3. Food safety, nutrition, and health;
4. Renewable energy, natural resources, and environment;
5. Agriculture systems and technology; and
6. Agriculture economics and rural communities.

To the maximum extent practicable, the National Institute of Food and Agriculture (NIFA), in coordination with the Under Secretary for Research, Education, and Economics (REE), will make grants for high priority research, education, and extension, taking into consideration, when available, the determinations made by the National Agricultural Research, Extension, Education, and Economics Advisory Board (NAREEEAB) pursuant to section 2(b)(10) of the Competitive, Special, and Facilities Research Grant Act (7 U.S.C. 450i(b)(10)), as amended. The authority to carry out this program has been delegated to NIFA through the Under Secretary for REE.

### **B. Purpose and Priorities**

The purpose of AFRI is to support research, education, and extension work by awarding grants that address key problems of national, regional, and multi-state importance in sustaining all components of food and agriculture, including conventional, sustainable and organic food production, farm efficiency and profitability, ranching, renewable energy, forestry (both urban and agroforestry), aquaculture, rural communities and entrepreneurship, human nutrition, food safety, physical and social sciences, home economics and rural human ecology, biotechnology, and conventional breeding. Through this support, AFRI advances knowledge in both fundamental and applied sciences important to agriculture. It also allows AFRI to support education and extension activities that deliver science-based knowledge to people, allowing them to make informed practical decisions. This AFRI RFA is announcing funding opportunities for fundamental Research, applied Research, and Integrated Research, Education, and/or Extension Projects.

Supporting the many components of agriculture under the constraints of a growing population, pressure on natural resources, and the challenges of climate variability and change, requires research, education, extension, and integrated programs that increase agricultural and natural resource sustainability. The term "sustainable agriculture" (NARETPA, 7 U.S.C. 3103) means an integrated system of plant and animal production practices having a site-specific application that will over the long-term achieve the following goals: 1) satisfy human food and fiber needs; 2) enhance environmental quality and the natural resource base upon which the agriculture economy depends; 3) make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; 4) sustain the economic viability of farm operations; and 5) enhance the quality of life for farmers and society as a whole.

The National Research Council Committee on Twenty-First Century Systems Agriculture recently updated and simplified sustainable agriculture as a four-part goal: satisfy human food, feed, and fiber needs and contribute to biofuel needs; enhance environmental quality and the resource base; sustain the economic viability of agriculture; and enhance the quality of life for farmers, farm workers, and society as a whole. The Committee states that progress toward these goals will require robust systems which adapt to and

continue to function in the face of stresses, are productive, use resources efficiently, and balance all four goals across all scales of farms and enterprises. They further state that if the U.S. is to maintain adequate resources to meet food, feed, fiber, and biofuel needs, progress toward meeting the four goals must be accelerated. This acceleration must be based on research that determines ways to reduce tradeoffs and enhance synergies among the four goals while managing risks associated with their pursuit. The Committee's 2010 report, *Toward Sustainable Agricultural Systems in the 21<sup>st</sup> Century*, provides a review of the contributions of farming practices and systems; and fields of science that elaborate on these general goals with respect to many of the specific priorities within AFRI programs.

AFRI is intended to promote advances in U.S. food, agriculture and forestry. Agriculture, however, is increasingly worldwide in scope and reach. To attain AFRI's goals for U.S. food and agriculture, applicants to Foundational or Challenge Area RFAs may include international partnerships or engagement in proposals, as appropriate. Applicants are asked to keep in mind that while international activities supported by AFRI may contribute to global food security, as described in the U.S. Government's Feed the Future global food security initiative ([www.feedthefuture.gov](http://www.feedthefuture.gov)), any international activity proposed under AFRI, such as partnerships, exchanges, training, travel, etc., must first and foremost support AFRI's domestic program goals. Applicants must clearly describe and demonstrate how international activities proposed in applications submitted to AFRI will contribute to and support advances in American agriculture.

If international activities (e.g., partnerships, exchanges, travel, etc.) are proposed, then applicants shall describe indicators that will be used to assess those activities. Appropriate indicators include but are not limited to those posted at the U.S. Government's Feed the Future global food security initiative Web site ([www.feedthefuture.gov/progress](http://www.feedthefuture.gov/progress)).

### **Stakeholder Input**

The programs described herein were developed within the context of the authorized purposes of USDA research, extension, and education projects and activities. In addition, AFRI obtains input from Congress, the NAREEEAB, as well as many university, scientific, and agricultural committees and organizations. Stakeholder input is documented in the stakeholder's Web page ([www.nifa.usda.gov/business/reporting/stakeholder.html](http://www.nifa.usda.gov/business/reporting/stakeholder.html)) and is considered when developing and updating Program Area Descriptions and Priorities each year.

The AFRI program was significantly restructured and refocused in FY 2010 to more effectively address societal challenges while continuing to support foundational agricultural science. A public meeting was held on June 2, 2010, to seek stakeholder comment on the FY 2010 AFRI RFAs prior to revising them for FY 2011. NIFA again solicited stakeholder input via a public meeting and 12 program-specific webinars. The public meeting was held on February 22, 2012, and the webinars were held during the months of March and April, 2012. NIFA received more than 145 comments from stakeholders, including a wide range of scientific societies, producer associations, universities and other research organizations, policy and advocacy groups, non-profit organizations, and leading scientists in the field of agriculture and food sciences. Collectively, the non-governmental organizations represented over 300,000 stakeholders of interest. A comprehensive analysis was conducted of the written and oral stakeholder input comments received. Categorically, these comments can be clustered into the following: Production Agriculture; Food Safety; Energy, Environment, Natural Resources, and Rural Communities; Bioengineering, Biochemistry, and Plant Health; Health and Obesity; Grant-making; and Animal Agriculture and Aquaculture.

In general, the broad range of AFRI stakeholders provided overwhelming support for NIFA and the AFRI program. During the in-person stakeholder listening session, 100 percent of the speakers expressed their appreciation for the event and the opportunity to participate. It should be noted that hundreds of e-mails were received from stakeholders indicating their regrets of not being able to attend due to other commitments, the short notification, and lack of financial resources. Overall, stakeholders applauded NIFA for expending the time, effort, and resources to facilitate sessions designed to obtain their feedback, comments, and being responsive to stakeholder input. In addition, almost ten percent of the stakeholders specifically expressed their gratitude for the Administration, USDA, and NIFA's request for an increase in funding for the AFRI program in the FY 2013 budget. Moreover, many supported full funding of the AFRI program to the level authorized in the 2008 Farm Bill. Stakeholders with current and past AFRI projects

expressed their appreciation of the goals and mission of the AFRI program. The stakeholders applauded NIFA for its leadership in taking on the diverse, global agricultural and food science issues. In addition, a significant proportion of the stakeholders, 40 percent, expressed in great detail the level of their gratitude for AFRI as a funding source, the competitive grants process, efforts to ensure that AFRI Challenge Area RFAs include basic research and relevant scientific disciplines. Lastly, stakeholders articulated their support for NIFA's partnership initiatives including inter-agency and public-private efforts.

Stakeholder concern exists regarding NIFA's compliance with AFRI authorizing language, the scientifically confining aspects of the RFAs, the funding amount and allocations between the foundational and challenge areas, the benefit and efficacy of Coordinated Agricultural Project (CAP) grants, and the overall AFRI program/project types that are under/not funded. Stakeholders expressed trepidation regarding the eligibility criteria for integrated projects that exclude entities beyond colleges and universities as primary recipients. Also, stakeholders felt that the funding level of the Foundational Program was inadequate and indicated support of an allocation level of up to 50 percent of the AFRI appropriation for that part of the program. Other stakeholders provided input regarding specific AFRI set-aside amounts for program/projects, e.g., organic, classical breeding, water, and biotechnology. Overall, 30 percent of stakeholders expressed concern that CAP grants are too large. While many of the stakeholders expressed an understanding of the concept and benefit of CAP grants to long-term, interdisciplinary, scientific research, stakeholders encouraged NIFA to reconsider and balance the portfolio and funds attributed to these types of projects. Additionally, stakeholders expressed concerns regarding the overall AFRI program, as it pertains to decisions that eliminate and/or reduce single-investigator, hypothesis-driven scientific discovery, junior faculty award success rates, qualified and diverse panel reviewers, and a disconnect between industry and higher education scientific research.

Stakeholders provided an abundance of recommendations that are proactive and designed to have immediate, beneficial outcomes. The recommendations included the need for NIFA to define its agricultural identity among the federal agencies, improvements to the AFRI Program, current and future investments, and the development of RFAs. Some stakeholders indicated that NIFA was duplicative and/or indistinguishable in its research efforts associated with other federal agencies. However, they were supportive of the need and benefit of leveraging limited resources through inter-agency partnerships. Stakeholders expressed the need for more, smaller innovative awards in the amount of \$1 million dollars and restricting the size of CAP awards to \$10 to \$20 million. Lastly, the recommendations regarding RFAs included expanding and/or clarifying the restrictive language, allowing adequate time to prepare a responsive comprehensive proposal, systematic and consistent publishing of the RFA, and associating the request for information in the solicited proposals to match the size of the award.

In response to the comments received, NIFA took several actions. The AFRI program is undergoing a rigorous external evaluation to examine a number of issues around NIFA's administration of the program and to assess the quality of the work being supported. Based on the recommendations of the evaluation, as well as comments from stakeholders, NIFA will make changes to program offerings, make adjustments to award sizes, and reconsider the distribution of funds between Challenge Areas and the Foundational Program. The rate at which these changes will occur will depend, in part, on available funding.

NIFA understands that some stakeholders are concerned about priority limitations identified in the AFRI RFAs. NIFA has focused on making critical but essential decisions regarding the scientific reach and impact for each RFA that is published. These decisions included the identification of five Challenge Areas in FY 2010 that are relevant and consistent with the priority areas identified in the AFRI legislation. After careful consideration, the AFRI program will introduce the Water for Agriculture Challenge Area in FY 2014. Moreover, these decisions are guided by 2008 Farm Bill; National Agricultural Research, Extension, Education, and Economics Advisory Board; USDA Strategic Plan; Research, Education, and Economics Action Plan; NIFA Strategic Plan; pertinent industry-related scientific reports; and stakeholder input. In the end, the RFAs reflect a comprehensive, consultative document to address the collective needs of specific scientific issues that notably impact America's agricultural and food system.

Within the stakeholder community, there is a fair amount of concern regarding NIFA's agricultural identity among the federal agencies, specifically as it applies to addressing childhood obesity prevention. NIFA

emphasizes the role of foods and whole diets in the prevention of chronic degenerative diseases, while the National Institutes of Health, addresses therapeutic aspects. Successful applications to AFRI must align with USDA and NIFA mission, strategic plans, and goals. Moreover, the existing REE Action Plan encourages formal and informal collaboration with other USDA and Federal agencies, as well as public and private partners. The focus of these partnerships is on a national and international level to ensure our research, education, and extension activities that are representative of current priorities and take advantage of existing knowledge.

NIFA acknowledges the level of concern that exists within a portion of the stakeholder community regarding entities eligible to submit applications for integrated projects. Eligibility for all NIFA programs is established in authorizing legislation. Eligibility to apply to the AFRI program was established in the 2008 Farm Bill and NIFA has adhered to that requirement. Applicants not eligible to directly apply are encouraged to partner with eligible institutions. In addition, NIFA remains committed to engaging small, mid-sized and minority-serving institutions and new investigators in all of its programs. To ensure their participation in AFRI, NIFA offers Food and Agriculture Science Enhancement (FASE) grants within most of the program areas. FASE gives special funding consideration to applications from qualifying schools for even the largest grants, and NIFA sets aside 10 percent of AFRI funding for this purpose. FASE-eligible schools are those with enrollments of fewer than 17,500 students, minority-serving institutions, and those in Experimental Program to Stimulate Competitive Research (EPSCoR) states (see Part II, D, 4, c, 2). In addition, AFRI gives special consideration to new faculty with fewer than five years of experience, and offers pre- and post-doctoral fellowships to encourage young scientists to engage in agricultural science.

Lastly, the President's Council of Advisors on Science and Technology (PCAST) report on "Agricultural Preparedness & the United States Agricultural Research Enterprise" ([www.whitehouse.gov/sites/default/files/microsites/ostp/pcast\\_agriculture\\_20121207.pdf](http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast_agriculture_20121207.pdf)) released on December 7, 2012, recommended Federal investment in three main areas: research support, training and workforce development, and research infrastructure. The PCAST report also recommended an "emphasis on basic research as well as managing the risks associated with emerging threats such as new pests and pathogens, limited water availability, environmental impacts of agriculture on human and environmental health, or adaptation to a changing climate." Within the AFRI Foundational Program, support is provided for fundamental/basic and applied research that addresses the six priority areas identified within the Food, Conservation, and Energy Act of 2008. In FY 2014, the AFRI program will introduce the Water for Agriculture Challenge Area Program, Exploratory Research Program, and the CARE (Critical Agricultural Research and Extension) Program to address critical and emerging issues in agriculture and agricultural water concerns. This RFA also includes training and workforce development through opportunity for inclusion of undergraduate, graduate and postdoctoral trainees on research and integrated projects. AFRI also provides additional opportunities for training and workforce development through its NIFA Fellowships Grant Program that supports predoctoral and postdoctoral fellowships in the agricultural sciences. Support for research infrastructure is provided through limited availability of equipment grants in the Foundational Program and Challenge Areas, as authorized by the Food, Conservation, and Energy Act of 2008.

More detailed comments relevant to each Challenge Area RFA will be published in those RFAs, along with NIFA's responses to those comments.

### **Background**

AFRI is one of NIFA's major programs through which to address critical societal issues such as those laid out in the *New Biology for the 21<sup>st</sup> Century: Ensuring the United States Leads the Coming Biology Revolution* report. USDA leadership has integrated the six AFRI priority areas (outlined in Part I, A) with a focus on grand societal challenges broadly identified by the scientific community in reports such as the "New Biology for the 21<sup>st</sup> Century". Leadership in the scientific community has been calling on multidisciplinary efforts, which integrate biological and social science work to help solve grand societal challenges. NIFA work brings the unique capacity to integrate research, education, and extension in order to enhance the impact of scientific work. USDA science will support the following challenges:

1. Keep American agriculture competitive while ending world hunger;
2. Improve nutrition and end child obesity;

3. Improve food safety for all Americans;
4. Secure America's energy future; and
5. Mitigate and adapt to climate variability and change.

In FY 2010, NIFA released several AFRI RFAs to address these challenges at a meaningful scale and to achieve outcomes of relevance to the societal challenges. These RFAs addressed each of the five challenges, enabled transition and refocusing of grants made previously under AFRI, and provided pre- and postdoctoral fellowship opportunities. These RFAs solicited applications for larger awards for longer periods of time to enable greater collaboration among institutions and organizations, and integration of basic and applied research with deliberate education and extension programs.

In FY 2014, AFRI will solicit projects addressing the above challenges through four separate Challenge Area RFAs. They are: Food Safety; Food Security; Childhood Obesity Prevention; and Water for Agriculture (new challenge area). AFRI will also support research, extension and integrated project grants in the six legislatively-defined AFRI priority areas to continue building a foundation of knowledge in fundamental and applied food and agricultural sciences critical for solving current and future societal challenges. Grant types supported by AFRI within this Foundational Program RFA include single-function research projects, multi-function integrated projects, and Food and Agricultural Science Enhancement (FASE) grants. In addition, funding opportunities for pre- and postdoctoral fellowship grants are being offered in a single, separate [RFA](#).

In FY 2014, RFAs will not be released for either the Sustainable Bioenergy or the Agricultural and Natural Resources Science for Climate Variability and Change challenge areas. Please note, however, that NIFA will support some of the ongoing research, education, and extension projects in those challenge areas through continuation funding of projects initiated during FY 2010 through 2013.

NIFA may also solicit applications for AFRI funds through other announcements, including supplemental AFRI RFAs or RFAs issued in conjunction with other agencies. Such announcements will be made public in the same manner as this announcement. Other sources of NIFA funding or work relevant to the AFRI Foundational Program Areas are as follows:

- *Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Species* (joint with National Institutes of Health (NIH)).  
Total Program Funds: Approximately \$5 million from AFRI. Information is available at <http://nifa.usda.gov/fo/researchinbiomedicineandagricultureafri.cfm>
- *National Robotics Initiative* (joint with National Science Foundation (NSF), NIH, National Aeronautics and Space Administration (NASA), and Department of Defense (DoD)).  
Total Program Funds: Approximately \$5 million from AFRI. Information is available at [http://nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=503641](http://nsf.gov/funding/pgm_summ.jsp?pims_id=503641)
- *Plant Feedstock Genomics for Bioenergy* (joint with Department of Energy (DOE)).  
Total Program Funds: Approximately \$2 million from AFRI. Information is available at [www.nifa.usda.gov/fo/plantfeedstock.cfm](http://www.nifa.usda.gov/fo/plantfeedstock.cfm)
- *Ecology and Evolution of Infectious Diseases* (joint with NIH, NSF, and the U.K. Biotechnology and Biological Sciences Research Council (BBSRC)).  
Total Program Funds: Approximately \$2.5 million from AFRI. Information is available at <http://nifa.usda.gov/fo/ecologyandevolutionofinfectiousdiseases.cfm>
- *Water Sustainability and Climate* (joint with NSF)  
Total Program Funds: Approximately \$5 million from AFRI. Information is available at [www.nsf.gov/publications/pub\\_summ.jsp?WT.z\\_pims\\_id=503452&ods\\_key=nsf11551](http://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=503452&ods_key=nsf11551)
- *Decadal and Regional Climate Prediction using Earth System Models (EaSM)* (joint with NSF)

Total Program Funds: Approximately \$5 million from AFRI. Information is available at [www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=503399](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503399)

### **Foundational Program**

The Foundational Program RFA focuses on building a foundation of knowledge in fundamental and applied food and agricultural sciences critical for solving current and future societal challenges. Grant types supported by AFRI within this area include single-function Research Projects, multi-function Integrated Projects, and Food and Agricultural Science Enhancement (FASE) Grants.

### **C. Program Area Descriptions**

#### **Background**

NIFA offers two **new** program areas (Critical Agricultural Research and Extension, and Exploratory) in addition to the six program areas that support research, and integrated projects in this RFA. Applicants are encouraged to review this entire RFA, other AFRI RFAs ([www.nifa.usda.gov/funding/afri/afri.html](http://www.nifa.usda.gov/funding/afri/afri.html)), and explore other programs offered by NIFA to find the most appropriate source of funding. These RFAs can be accessed through [www.grants.gov](http://www.grants.gov).

The following Foundational Program Areas provide a base from which applications for research projects, integrated projects, and FASE grants may be developed. These descriptions establish the scope of each Program Area. In all Program Areas, AFRI encourages submission of innovative “high-risk” projects with potential for future high impact on agriculture, as well as innovative proposals with potential for near-term results and impacts.

Projects addressing biological issues should focus on agriculturally-important organism(s) to accomplish the project objectives. The use of other organisms as experimental model systems must be justified relative to the goals of the appropriate program area priorities.

### **1. Plant Health and Production and Plant Products**

#### **Background**

Plant protection, plant production and the development of new plant products are critical to the sustainability and competitiveness of U.S. agriculture and the success and growth of the Nation’s economy. Future improvements will require an increased understanding of complex, inter-related factors at a wide range of scales. These include investigations of plant biology at molecular, cellular and whole-plant levels as well as innovative and environmentally sound approaches to improve plants and protect them from biotic and abiotic stresses. Increased knowledge of plant systems and the various factors that affect plant productivity will allow U.S. agriculture to face critical challenges in areas such as food security, sustainability, bioenergy, climate change, multiple cropping, organic production, loss of agricultural land, and increasing global competition. There is no preference for any specific agriculturally-important organism or production system, but the justification should include a description of the importance of the organism or system and/or why the organism or system (e.g., alfalfa, forages, organic systems) requires additional study.

The AFRI Plant Health, and Production and Plant Products program area addresses the following priorities of the 2008 Farm Bill: A. Plant Health and Production and Plant Products – Plant systems (subpriorities i. plant genome structure and function; ii. molecular and cellular genetics and plant biotechnology; iii. conventional breeding, including cultivar and breed development, selection theory, applied quantitative genetics, breeding for improved food quality, breeding for improved local adaptation to biotic stress and abiotic stress; iv. plant pest interactions and biocontrol systems; v. crop plant response to environmental stresses; and vi. [improved] nutrient qualities of plant products); D. Renewable Energy, Natural Resources, and Environment - Natural resources and the environment (subpriorities i. fundamental structures and functions of ecosystems; ii. biological and physical bases of sustainable production systems; iv. global climate effects on agriculture; v. forestry; and vi. biological diversity and F. Agriculture Economics and Rural Communities – Markets, trade and policy (subpriority iv. choices and applications of technology).

The AFRI Plant Health and Production and Plant Products program area directly aligns with the Research, Education, and Economics Action Plan ([www.ree.usda.gov/ree/news/USDA\\_REE\\_Action\\_Plan\\_02-2012\\_2.pdf](http://www.ree.usda.gov/ree/news/USDA_REE_Action_Plan_02-2012_2.pdf)) and specifically addresses: Goal 1 – Local and Global Food Supply and Security, Subgoals 1A, 1B, and 1C (which focus on Crop Production, Health, Genetics, Genomics, Genetic Resources, and Biotechnology); and Goal 2 - Responding to Climate and Energy Needs, Subgoals 2A and 2B (which focus on Climate Variability, Bioenergy/Biofuels and Biobased Products) by developing and extending approaches to enhance local and global food supply and security, while also responding to climate and energy needs.

In FY 2014, AFRI invites Research Project applications for Standard, Conference and FASE Grant types relevant to the six priority areas of the Plant Health and Production and Plant Products Program Area described below.

**Letter of Intent Deadline** – February 19, 2014(5:00 p.m. ET); see Part IV, A for instructions

**Program Area e-mail for Submission of Letter of Intent** – [plants@nifa.usda.gov](mailto:plants@nifa.usda.gov)

**Application Deadline** - April 17, 2014 (5:00 p.m. ET) for Plant Breeding for Agricultural Production, Plant Growth and Development, Composition and Stress Tolerance, Photosynthetic Efficiency and Nutrient Utilization in Agricultural Plants, Understanding Plant-Associated Microorganisms and Plant-Microbe Interactions and Controlling Weedy and Invasive Plants.

**Application deadline** is May 1, 2014 (5:00 pm ET) for Plant-Associated Insects and Nematodes

**Total Program Funds** –Approximately \$20 million

**Proposed Budget Requests** -

- Standard Grants must not exceed \$500,000 total (including indirect costs) for project periods of up to 5 years.
- Conference and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed.

**Program Area Priorities** – Each application must address one of the following six Program Area Priorities:

**1. Plant Breeding for Agricultural Production**

**Program Area Priority Code** – A1141

**Program Area Priority Contact** – Dr. Ann Marie Thro (202) 401-6702 or [athro@nifa.usda.gov](mailto:athro@nifa.usda.gov)

Plant breeding is a foundational element for sustainable food production.

This priority is focused on public breeding efforts to improve crop yield, efficiency, quality and/or adaptation to diverse agricultural systems and includes:

- Pre-breeding and germplasm enhancement, cultivar development, selection theory, applied quantitative genetics, and participatory breeding;
- Development of tools to predict phenotype from genotype to accelerate breeding of finished varieties; or
- Conference grants to identify regional needs for plant breeding research, education or extension.

**Other Program Area Priority Requirements for Plant Breeding for Agricultural Production:**

- Research that incorporates training of field-based plant breeders is encouraged.
- Plant breeders are encouraged to submit applications.
- Applications to Program Area Priority, Plant Breeding for Agricultural Production (A1141) must provide a description and budgeted plan for the release of research results (e.g., data, germplasm, cultivars, genetic resources) that is compliant with the terms and conditions that govern **USDA NIFA funded projects in the areas of plant breeding, genetics and genomics**, especially page 5 (Genetic Resources from Outside of the U.S); pages 6-8 (Patents and Inventions including Plant Variety Protection); and pages 10-12 (Release of Animal or Plant Genome Sequence Data and Distribution of Animal or Plant Genomic

Resources, and the Release or Distribution of Plant Germplasm). Terms and conditions can be found at: [www.nsf.gov/pubs/policydocs/rtc/agency specifics/nifa\\_413.pdf](http://www.nsf.gov/pubs/policydocs/rtc/agency specifics/nifa_413.pdf)

## **2. Plant Growth and Development, Composition and Stress Tolerance**

**Program Area Priority Code** – A1101

**Program Area Priority Contact** – Dr. Liang-Shiou Lin (202) 401-5045 or [llin@nifa.usda.gov](mailto:llin@nifa.usda.gov)

Molecular, biochemical, cellular and whole-plant approaches to:

- Understanding how plant growth and development affect plant productivity;
- Improving plant composition and nutritional quality; or
- Understanding mechanisms of plant response to abiotic stresses.

**NOTE:** Biotechnological approaches addressing these problems may be appropriate for this program area priority. Investigators interested in the mechanisms of plant responses to biotic stresses should consider submitting to the Understanding Plant-Associated Microorganisms and Plant-Microbe Interactions (A1121) or the Plant-Associated Insects and Nematodes (A1111) Program Area Priorities.

## **3. Photosynthetic Efficiency and Nutrient Utilization in Agricultural Plants**

**Program Area Priority Code** – A1151

**Program Area Priority Contact** – Dr. Shing Kwok (202) 401-6060 or [skwok@nifa.usda.gov](mailto:skwok@nifa.usda.gov)

Molecular, biochemical, cellular and whole-plant approaches to:

- Increasing plant productivity through studies of carbon assimilation, source-sink relationship, and photosynthetic efficiency; or
- Improving nutrient (e.g., nitrogen, phosphorus) uptake, assimilation, accumulation, and/or utilization through studies in crops or studies of plant-microbe interactions.

## **4. Understanding Plant-Associated Microorganisms and Plant-Microbe Interactions**

**Program Area Priority Code** – A1121

**Program Area Priority Contact** – Dr. Ann Lichens-Park (202) 401-6460 or [apark@nifa.usda.gov](mailto:apark@nifa.usda.gov)

This priority area supports projects on mechanisms of plant-microbe interactions, communication within microbial populations, communication between plants and microbes, and studies of epidemiological characteristics of agriculturally important microbes. Proposals may focus on fungi, oomycetes, bacteria, viruses and/or the plants associated with them. Systems studied must be strongly justified in terms of relevance to agriculture. However, proposals focusing solely or largely on model plants, such as Arabidopsis, are not appropriate for this program. The program encourages use of functional genomics approaches.

Research focus areas must include one or more of the following:

- Elucidation of molecular mechanisms used by microorganisms to interact with plant hosts and/or with other microorganisms associated with plants. Applications may address pathogenic and/or beneficial interactions. Interactions addressed may be physical interactions, such as mechanisms used by microbial effector proteins to enter plant hosts and/or chemical interactions, such as chemical signaling;
- Elucidation of molecular mechanisms used by plants to respond to or interact with microorganisms; or
- Studies examining epidemiological factors that influence disease spread.

**NOTE:** Studies of plant-microbe interactions that improve plant nutrient uptake or utilization are not appropriate for this program area priority; these projects should be submitted to Program Area Priority, Plant Photosynthetic Efficiency and Nutrient Utilization (A1151).

## **5. Controlling Weedy and Invasive Plants**

**Program Area Priority Code** – A1131

**Program Area Priority Contact** – Dr. Michael Bowers (202) 401-4510 or [mbowers@nifa.usda.gov](mailto:mbowers@nifa.usda.gov)

This priority area supports projects that focus on compelling scientific questions underlying current issues in weed and invasive plant management in crops, managed forests and rangeland including:

- Ecological processes related to biocontrol and/or integrated pest management;
- The evolution, spread and mitigation of herbicide resistance based on an understanding of ecological fitness and gene flow; or
- Other ecological or evolutionary studies that would inform weed management strategies, including links between agronomic practices and weed problems.

## **6. Plant-Associated Insects and Nematodes**

**Program Area Priority Code** – A1111

**Program Area Priority Contacts** – Dr. Mary Purcell-Miramontes (202) 401-5168 or

[mpurcell@nifa.usda.gov](mailto:mpurcell@nifa.usda.gov)

**Application deadline** - May 1, 2014 (5:00 pm ET)

**Proposed Budget Requests** –

- Standard Grants must not exceed \$500,000 total (including indirect costs) for project periods of up to 5 years.
- Conference and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed.

This priority area supports projects to increase fundamental and applied knowledge of biological and environmental processes that affect the abundance and spread of plant-associated pest and beneficial insects or nematodes in agricultural systems (including managed forests and rangelands). Research on factors associated with the decline of insect pollinators, disruption of natural enemies, and development of solutions to mitigate these problems is particularly emphasized. While realizing the value of discovery-oriented research, this priority area will emphasize hypothesis-driven research. Projects that include an evaluation of pest or pollinator management are strongly encouraged to include an economic analysis.

Research focus areas must include one or more of the following:

- Interactions of insects or nematodes with other insects or nematodes, plants or microbes. Both organismal and molecular level approaches are appropriate;
- Mechanisms of plant response to insects or nematodes. Elucidation of signaling mechanisms between plants and insects or nematodes are encouraged; or
- Fundamental research that leads to biologically-based pest management approaches to managing insects and nematodes (systems level research may be considered).

**NOTE:** Projects in this priority area may develop integrated pest management or other ecologically-based management programs (either in the short or long term). Projects on pests of livestock or nuisance pests in urban systems are not supported by this program area priority.

## **Other Program Area Key Information applicable to ALL Plant Health and Production and Plant Products priority areas 1-6:**

- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.

## **2. Animal Health and Production and Animal Products**

## Background

Animal production and health play critical roles in the sustainability and competitiveness of U.S. agriculture. They contribute significantly to the nation's economy, global food production and food security. Our competitiveness depends on understanding the critical biological and physiological mechanisms underlying nutrition, growth, reproduction, and health in livestock, poultry, equine, and aquaculture species. Research at the genetic, genomic, molecular, cellular and organ systems levels is essential. We need to expand our knowledge using basic and applied research to reduce production and health costs, enhance nutritional quality of animal products, and minimize environmental impacts. This information is required to develop better management strategies for both conventional and organic production systems to improve production efficiency and animal well-being, enhance animal health, and develop improved animal products for human use. These strategies may include the application of biotechnology, conventional breeding, and breed development.

The AFRI Animal Health and Production and Animal Products program area addresses the following priorities within the 2008 Farm Bill: B. Animal Health and Production and Animal Products - Animal systems (subpriorities i. aquaculture; ii. cellular and molecular basis of animal reproduction, growth, disease, and health; iii. animal biotechnology; iv. conventional breeding, including breed development, selection theory, applied quantitative genetics, breeding for improved food quality, breeding for improved local adaptation to biotic stress and abiotic stress, and participatory breeding; v. identification of genes responsible for improved production traits and resistance to disease; vi. improved nutritional performance of animals; vii. improved nutrient qualities of animal products and uses; and viii. the development of new and improved animal husbandry and production systems that take into account production efficiency, animal well-being, and animal systems applicable to aquaculture).

The Animal Health and Production and Animal Products program area directly aligns with the Research, Education, and Economics Action Plan ([www.ree.usda.gov/ree/news/USDA\\_REE\\_Action\\_Plan\\_02-2012\\_2.pdf](http://www.ree.usda.gov/ree/news/USDA_REE_Action_Plan_02-2012_2.pdf)) and specifically addresses: Goal 1. Local and Global Food Supply and Security; Goal 2. Responding to Climate and Energy Needs; and, Goal 3. Sustainable Use of Natural Resources.

In FY 2014, AFRI invites Research Project applications that support Standard, Conference and FASE Grant types relevant to the seven priority areas of the Animal Health and Production and Animal Products Program Area described below.

Additionally in FY 2014, NIFA has partnered with the Biotechnology and Biological Sciences Research Council (BBSRC) of the United Kingdom (UK) for a new priority area to solicit Collaborative Standard research applications in two areas: **Animal Health and Disease; and, Veterinary Immune Reagents**. The goal of this pilot partnership is to leverage fiscal, physical and intellectual resources to facilitate coordinated research that addresses high impact diseases and animal health issues relevant to stakeholders in both countries. The UK component of the US-UK Collaborative Project will be funded under the umbrella of the Living With Environmental Change (LWEC) partnership ([www.lwec.org.uk](http://www.lwec.org.uk)) and the Global Food Security Programme ([www.foodsecurity.ac.uk](http://www.foodsecurity.ac.uk)).

**Letter of Intent Deadline** – February 27, 2014 (5:00 p.m. ET); see Part IV, A for instructions

**Program Area e-mail for Submission of Letter of Intent** – [animals@nifa.usda.gov](mailto:animals@nifa.usda.gov)

**Application Deadline** – May 1, 2014 (5:00 p.m. ET)

**Total Program Funds** – Approximately \$18 million

**Proposed Budget Requests** –

- Standard Grants must not exceed \$500,000 total (including indirect costs) for project periods of up to 5 years.
- Conference, and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed.

**Program Area Priorities** – Each application must address one of the following seven Program Area Priorities:

### 1. Animal Reproduction

**Program Area Priority Code** – A1211

**Program Area Priority Contact** – Dr. Mark Mirando (202) 401-4336 or [mmirando@nifa.usda.gov](mailto:mmirando@nifa.usda.gov)

Cellular, molecular, genomic/genetic or whole-animal aspects of animal reproduction, especially focusing on:

- Gonadal function (including production, function, and preservation of gametes);
- Hypothalamic-pituitary axis; or
- Embryonic and fetal development (including interaction between the conceptus and its uterine environment).

**2. Animal Nutrition, Growth and Lactation**

**Program Area Priority Code** – A1231

**Program Area Priority Contact** – Dr. Steven Smith (202) 401-6134 or [sismith@nifa.usda.gov](mailto:sismith@nifa.usda.gov)

Cellular, molecular, genomic/genetic or whole-animal aspects of nutrition, growth and lactation, especially focusing on:

- Nutrient utilization and efficiency;
- Innovative approaches to feed formulation or use of novel alternative feedstuffs; or
- Improving the quality and efficiency of producing meat, milk, eggs, and animal fiber.

**3. Animal Well-Being**

**Program Area Priority Code** – A1251

**Program Area Priority Contacts** – Dr. Margo Holland, (202) 401-5044 or [mholland@nifa.usda.gov](mailto:mholland@nifa.usda.gov)  
and Dr. Peter Johnson (202) 401-1896 or [pjohnson@nifa.usda.gov](mailto:pjohnson@nifa.usda.gov)

Evaluation of current management practices and development of new management practices that reduce animal stress and optimize sustainable production efficiency. Areas of focus may include but are not limited to:

- Behavioral and/or physiological methods to objectively measure animal stress and well-being;
- Prevention or alleviation of pain or stress associated with management practices, including stocking density, handling and transportation; or
- Methods of humane slaughter or on-farm euthanasia.

**NOTE:** Proposals that address animal welfare with a significant engineering component such as the design, manufacture, and operation of structures, technologies, machines, processes, and/or systems should be submitted to the Agriculture Systems and Technology Program Area Priority: Engineering, Products, and Processes (A1521).

**4. Animal Health and Disease**

**\*\*\*Also see US-UK Collaborative Project funding opportunity described below in Section 7.\*\*\***

**Program Area Priority Code** – A1221

**Program Area Priority Contacts** – Dr. Margo Holland, (202) 401-5044 or [mholland@nifa.usda.gov](mailto:mholland@nifa.usda.gov)  
and Dr. Peter Johnson (202) 401-1896 or [pjohnson@nifa.usda.gov](mailto:pjohnson@nifa.usda.gov)

Cellular, molecular, genomic/genetic or whole-animal aspects of animal health and disease, especially focusing on:

- Maintenance of homeostasis;
- Disease prevention (vaccines, diagnostics, enhanced innate or adaptive immunity, disease resistance or susceptibility, or management); or
- Therapeutic interventions for disease reduction/treatment (including alternatives to current antimicrobial treatments).

**5. Tools and Resources - Animal Breeding, Genetics and Genomics**

**Program Area Priority Code** – A1201

**Program Area Priority Contact** – Dr. Lakshmi Kumar Matukumalli (202) 401-1766 or [lmatumalli@nifa.usda.gov](mailto:lmatumalli@nifa.usda.gov)

Development of community genetic and genomic resources and tools including software, experimental protocol/methods for breeding, advancing basic biology and applied animal health and nutritional focus such as:

- Improvement of genome assembly and annotation;
- Discovery and analysis of genetic diversity within and across breeds or populations (e.g., detection of signatures of selection);
- Application of genome-wide methods for identification of gene regulatory regions;
- Novel quantitative genetics methods including selection theory and modeling;
- User-friendly web interfaces and data visualization tools having knowledge exchange capabilities between federated databases within and across species; or
- Development of cyber-infrastructure tools, that will benefit agricultural animals through customization and addition of new software tools, for genotype-phenotype associations from analysis of large-scale sequence and/or genotype data, databases, and user-friendly web-interface.

**NOTE:** The emphasis of this program area priority is on the development of tools and resources. Applications that assess genome variation (e.g., selecting within a breed for a specific trait of interest) and relevance to function and phenotype for improved animal production or health, conventional animal breeding, breed development, or applied quantitative genetics should be directed to Program Area Priorities 1, 2, 3, or 4 identified above.

## 6. **Tools and Resources - Veterinary Immune Reagents**

**\*\*\*Also see US-UK Collaborative Project funding opportunity described below in Section 7.\*\*\***

**Program Area Priority Code – A1223**

**Program Area Priority Contacts –** Dr. Peter Johnson (202) 401-1896 or [pjohnson@nifa.usda.gov](mailto:pjohnson@nifa.usda.gov)  
and Dr. Margo Holland, (202) 401-5044 or [mholland@nifa.usda.gov](mailto:mholland@nifa.usda.gov)

Development of publicly accessible immunological reagents for agriculturally-relevant animal species.

Applicants must:

- Address one of the following **five species groups (ruminants: primary focus on bovine; swine; poultry; equine; or, aquaculture: primary focus on catfish and salmonids)**. Applications should clearly outline the methods that the project team will use to determine the US immunology research communities' highest priority needs for the species;
- Describe a strong management and implementation plan that includes standard operating procedures and addresses the following: quality control and quality assurance of developed reagents to ensure sensitivity and specificity; distribution and maintenance of the developed reagents, including a mechanism to avoid future reagent loss that guarantees the sustainability of developed reagents;
- All reagents must be made publicly available, reasonably priced, and readily accessible; and
- Describe how the project management structure will connect with principal national stakeholders and/or partners for the particular species group (such as through an Advisory Committee, etc.); international linkages are encouraged, when appropriate. Strong linkages with the larger community will help assure a high degree of accountability for community needs; synergies are facilitated and unnecessary duplication can be avoided.

### **Program Area Priority Additional Information:**

- Applicants are strongly encouraged to contact one of the Program Area Priority Contacts prior to submission of letter of intent.
- A maximum of one award per species is anticipated for a maximum total of five awards. If an award is made in FY 2014 for a species, that species will not be eligible for a second immune reagent award from the FY 2015 RFA.
- To foster mutual learning and synergies among projects, AFRI will facilitate networking among species awardees each year through one Project Director meeting at a location to be

determined and three video conferences. Each award team will share their progress to date (e.g., timeline metrics, including any ongoing challenges and those solved) and next steps, and also consider collaboration opportunities among one or more award teams for mutual benefit.

7. **US-UK Collaborative Projects: Animal Health and Disease; and Veterinary Immune Reagents**

**Program Area Priority Code – A1224**

**Program Area Priority Contacts –**

US applicants: Dr. Peter Johnson (202) 401-1896 or [pjohnson@nifa.usda.gov](mailto:pjohnson@nifa.usda.gov) and

Dr. Margo Holland, (202) 401-5044 or [mholland@nifa.usda.gov](mailto:mholland@nifa.usda.gov)

UK applicants: Dr. Sadhana Sharma, Strategy and Policy Manager-Animal Health, BBSRC,  
44 (0) 1793-413099 or [sadhana.sharma@bbsrc.ac.uk](mailto:sadhana.sharma@bbsrc.ac.uk)

**NOTE:** Letters of Intent for US-UK Collaborative Projects must be emailed to [animals@nifa.usda.gov](mailto:animals@nifa.usda.gov) and [UK-USCollab@bbsrc.ac.uk](mailto:UK-USCollab@bbsrc.ac.uk). Letter of Intent deadline and further guidance are listed previously, directly after the background section of “**Animal Health and Production and Animal Products**”.

**A. Animal Health and Disease**

- **Research on emerging diseases and/or diseases of agriculturally relevant animals of high economic consequence in BOTH the US and UK (viral, bacterial, and parasitic diseases):**
  - Pathogen emergence, persistence, transmission, infectivity and pathogenesis, host-pathogen interactions (including immunology; genetics and genomics), epidemiology, diagnostics or
  - Next generation vaccines with particular emphasis on approaches using new techniques and methodologies.
- **Alternatives to current antimicrobials and anthelmintics used to treat disease in agricultural animals in BOTH the US and UK:**
  - Strategies including but not limited to the following: antimicrobial peptides, prebiotics, probiotics, bacteriophage, modulators of innate and adaptive immunity, immune modulation, novel approaches based on gut microbiome and host interactions, or genetic resistance to disease, including classical animal breeding;
  - The human health impact of proposed alternate strategies must be considered (e.g., strategies should not create selection pressure favoring the development of antimicrobial resistance to medically relevant human antibiotics).

**B. Veterinary Immune Reagents**

- In addition to all the specific requirements in Section 6 above that must be followed by US-UK Collaborative proposals for Veterinary Immune Reagents, applicants must also:
  - Describe strategic and economic relevance of the species to the US and UK;
  - Clearly outline the methods the project team will use to determine the US and UK immunology research communities' highest priority needs for the species; and
  - Describe how AFRI and BBSRC funds will synergize to address high priority reagent gaps and avoid unnecessary duplication.

**NOTE:** In addition to the requirements described in “Other Program Area Key Information” below, US-UK Collaborative Project applicants must also read and adhere to the requirements in “**Additional Program Area Key Information for US-UK Collaborative Projects in Animal Health and Disease; and Veterinary Immune Reagents**”.

**Other Program Area Key Information applicable to ALL Animal Health and Production and Animal Products priority areas 1-7:**

- All applications must adhere to the requirements beginning in Part IV.
- All AFRI applications may include subcontracts to other institutions, including foreign. Adequate justification for foreign subcontracts is required with demonstration of the benefit to the US.

- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.
- Applicants must justify model systems (e.g., use of laboratory animals, cell cultures). Applications that primarily (i.e., encompassing greater than 50% of the work proposed) use non-agricultural or non-aquacultured species as models will not be considered.
- Applicants must include power analyses if experimental animals are used. Studies comparing treatment groups must justify the sample size for each experimental group, considering the magnitude of the treatment difference for the response variable, standard deviation for the response variable, power, and level of significance (i.e., probability of making a type I error).
- Applicants must provide a validation plan if diagnostic tests are developed.
- Applicants must include a statement addressing Minimum Information about Microarray Experiment (MIAME) compliance (see [www.mged.org](http://www.mged.org)) if microarray studies are included.
- Applicants must provide a plan to release research results to the public in a timely manner. Applicants must provide a description and budgeted plan for the release of research results (e.g., sequence data, germplasm, genetic resources) that is compliant with the terms and conditions that govern USDA NIFA funded projects in the Animal Health and Production and Animal Products Program Area, where applicable, especially page 5 (Genetic Resources from Outside of the U.S); pages. 6-8 (Patents and Inventions including Plant Variety Protection); and pages 10-12 (Release of Animal or Plant Genome Sequence Data and Distribution of Animal or Plant Genomic Resources, Release or Distribution of Animal Quantitative Trait Loci, and the Release or Distribution of Plant Germplasm). Terms and conditions can be found at [www.nsf.gov/pubs/policydocs/rtc/agencyspecifics/nifa\\_413.pdf](http://www.nsf.gov/pubs/policydocs/rtc/agencyspecifics/nifa_413.pdf)
- Applicants are encouraged to take advantage of molecular and biotechnology approaches to accelerate improvements in animal production and health, where appropriate.
- Applications with primary focus on the following should not be submitted to Animal Health and Production and Animal Products:
  - *Food Safety*. Consult the *Food Safety, Nutrition, and Health* Program Area Priorities in this RFA for a possible fit. Only pathogens that cause important disease in the agricultural animal are eligible for support in *Animal Health and Production and Animal Products*.
  - *Secondary effects or indirect effects of disease* (e.g., on reproduction, muscle growth, lactation).
  - *Plant-based vaccines*.
- Applications focused on the effects of metabolic disorders (e.g., hepatic lipidosis, insulin resistance) and nutrient deficiencies on meat, milk and egg production should be submitted to the Animal Nutrition, Growth and Lactation Program Area Priority (A1231); applications focused on the effects of metabolic disorders and nutrient deficiencies on immune function or susceptibility to disease should be submitted to the Animal Health and Disease Program Area Priority (A1221).
- Applicants are encouraged to review the Ecology and Evolution of Infectious Diseases (<http://nifa.usda.gov/fo/ecologyandevolutionofinfectiousdiseases.cfm>) and the Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Species (<http://grants.nih.gov/grants/guide/pa-files/PAR-13-204.html>) collaborative interagency programs. Additional information can be found under Part I, B.

**Additional Program Area Key Information only for the US-UK Collaborative Projects: Animal Health and Disease; and, Veterinary Immune Reagents (priority area 7):**

- **Prior to Letter of Intent Submission and Full Application Writing:**
  - US applicants are **strongly encouraged** to contact one of the US Program Area Priority Contacts to confirm that the topic meets NIFA's mission to support high priority issues relevant to US stakeholders.
  - UK applicants **must** contact the UK Program Area Priority Contact to confirm that the UK component fits BBSRC's requirements and the needs of UK stakeholders. UK researchers applying under this heading must meet BBSRC eligibility requirements for managed mode calls and must apply through an institution eligible to receive BBSRC funding. Please see BBSRC funding rules: [www.bbsrc.ac.uk/funding/apply/grants-guide.aspx](http://www.bbsrc.ac.uk/funding/apply/grants-guide.aspx). Applications with non-eligible UK partners will not be considered for funding as a US-UK Collaborative award.

- **Total US-UK Collaborative Budget:**

- In addition to the AFRI funding requested to support work led by US scientists, UK scientists should request additional funding in British pounds (£) from the BBSRC for their work; however, this part of the budget should not be reported on NIFA's Form SF424. Instead, budget details must be included in an appendix described below under "application submission".
- Equal support from AFRI and BBSRC is not required. Either country may contribute more than 50% of the total resources (e.g., AFRI 50% + BBSRC 50%; AFRI 70% + BBSRC 30%; AFRI 40% + BBSRC 60%; etc.). This provides each transatlantic team with maximum flexibility to use total project resources for the greatest scientific impact.
- Expected total funding from the BBSRC for this solicitation to fund the UK component of US-UK Collaborative Awards is up to £2 million (British pounds) for up to 5 years for the Animal Health and Disease priority and up to £0.5 million (British pounds) for up to 5 years for the Veterinary Immune Reagents priority. AFRI has not set a maximum to be spent on US-UK Collaborative awards.

- **Application Submission:**

- US-UK Collaborative applications must be submitted by US institutions and follow all AFRI requirements. The application title must begin with the words "US-UK Collaborative".
- The overall project must demonstrate a unified, collaborative approach; the specific contributions and responsibilities of the US and UK teams to the objectives must be set out clearly in the proposal's project narrative and be reflected in the budget justifications.
- US scientists are strongly discouraged from submitting more than one application as lead Project Director to the Animal Health and Disease section. However, US scientists may serve as co-project director on more than one application.
- Information for the UK component of US-UK Collaborative Applications should be included as Supplementary Documents in one or more Appendices labeled as "UK Supplementary Documents". This information should only include the following:
  - **Biographical sketches of UK senior personnel:** All biographical sketches must conform to NIFA format. NOTE: NIFA Conflict of interest lists are also required for all UK senior personnel.
  - **Added value of partnership:** How is this partnership bringing together complementary expertise in a meaningful intellectual collaboration?
  - **UK budget:** Costs and justification of resources for the UK component of the project should be entered into the Je-S system but the completed form **SHOULD NOT** be submitted electronically to the BBSRC at this stage. Instead, a PDF version of the form should be saved and sent to the US lead Project Director (PD) for inclusion as a supplementary document in the application. Also, an electronic copy of this document should be sent to the BBSRC cognizant program officer before Close of Business on the AFRI Animal Health and Disease deadline date. Full details regarding requirements can be obtained at [www.bbsrc.ac.uk/funding/opportunities/2013/animal-health-veterinary-immune-reagents.aspx](http://www.bbsrc.ac.uk/funding/opportunities/2013/animal-health-veterinary-immune-reagents.aspx). Applicants should ensure that they contact the main UK cognizant program officer at BBSRC to discuss the remit of their application and to confirm whether they should complete a BBSRC Je-S form. If awarded, the researchers will be asked to attend an annual meeting to be held at either the National Institute of Food and Agriculture or an alternate location. Thus, necessary travel costs for attendance of this meeting should be included in the proposed budget.
  - **Letters of collaboration:** Letters of collaboration from UK scientists are required. These letters must be brief and restricted to a statement of intent to collaborate only. Additional information on the nature of the collaboration and the roles of the investigators should be included in the 18 page AFRI Project Narrative.
  - **Institutional endorsement:** A certification of the submission must be provided by the UK institution where the work will be performed. This certification should be a signed letter from an authorized representative with the following text: "I confirm on behalf of [insert name of institution] that the US-UK Collaborative application between [insert name of PD from the US and institution] and [insert name of PD from the UK] is endorsed and has been submitted by [name of Research Office]."

**NOTE to UK applicants:** The applicants must ensure that all of the proposed research, whether it would be carried out in the UK or elsewhere, would comply with the principles of

BBSRC's and other UK funders' common guidance on "Responsibility in the use of animals in bioscience research" ([www.bbsrc.ac.uk/organisation/policies/position/policy/animals-in-bioscience-research.aspx](http://www.bbsrc.ac.uk/organisation/policies/position/policy/animals-in-bioscience-research.aspx)). In particular, UK Institutions should be aware of the following aspect of the guidance relating to research or collaboration outside the UK:

- "When collaborating with other laboratories, or where animal facilities are provided by third parties, researchers and the local ethics committee in the UK should satisfy themselves that welfare standards consistent with the principles of UK legislation (e.g., the Animals (Scientific Procedures) Act 1986), and set out in this guidance, are applied and maintained. Where there are significant deviations, prior approval from the funding body should be sought and agreed."

- **Application Review and Award Selection:**

- A separate peer review panel to evaluate US-UK Collaborative applications will not be convened. Instead, US-UK Collaborative applications will be reviewed with the other applications (non US-UK Collaboratives) submitted for that priority.
- To be competitive for funding, a US-UK Collaborative application must clearly demonstrate a substantial and meaningful collaboration between the US and UK partners. Work proposed by each country (and therefore each country's budget) must be integral to the success of at least one of the application objectives.
- After the peer review panel concludes, highly ranked US-UK Collaborative applications will be jointly discussed by AFRI and the BBSRC program leaders. To be recommended for funding as a US-UK Collaborative award, both AFRI and the BBSRC must agree to provide funding for the project. AFRI will not support the US component of a US-UK Collaborative unless the BBSRC funds the UK component, and vice-versa.
- AFRI components and UK components of the collaborative applications will be awarded in accordance with AFRI and BBSRC policies, respectively. If the BBSRC selects an application for funding, BBSRC will require that the costs for the UK component of the application be submitted via the RCUK's (Research Councils UK) Je-S application submission system before final approval. UK collaborators should therefore ensure that they are registered Je-S users before the application is submitted.

### **3. Food Safety, Nutrition, and Health**

#### **Background**

Human health is significantly affected by the safety, quality, and nutritive value of food. Knowledge generated from this program will enhance the microbial, physical, and chemical safety of foods, and provide information on the function and efficacy of foods, nutrients, and other bioactive components in promoting health. In addition, knowledge generated will improve processing, packaging and storage technologies to enhance the safety, quality and shelf life of foods. This knowledge will improve our understanding of human behaviors and how they are influenced by economic and other incentives in ways that enhance the safety, quality, and nutrient value of the food supply.

The AFRI Food Safety, Nutrition and Health program area addresses the following priorities within the 2008 Farm Bill: C. Food Safety, Nutrition, and Health - Nutrition, food safety and quality, and health (subpriorities i. microbial contaminants and pesticide residues relating to human health; ii. links between diet and health; iii. bioavailability of nutrients; iv. postharvest physiology and practices; and v. improved processing technologies).

The AFRI Food Safety, Nutrition, and Health program area directly aligns with the Research, Education, and Economics Action Plan ([www.ree.usda.gov/ree/news/USDA\\_REE\\_Action\\_Plan\\_02-2012\\_2.pdf](http://www.ree.usda.gov/ree/news/USDA_REE_Action_Plan_02-2012_2.pdf)). It specifically addresses: Goal 1. Local and Global Food Security Chain; Goal 4. Nutrition and Childhood Obesity; and Goal 5. Food Safety.

In FY 2014, AFRI invites Research Project applications for Standard, Conference, and FASE Grant types relevant to the three priority areas of the Food Safety, Nutrition and Health Program Area described below.

Letter of Intent Deadline – February 18, 2014 (5:00 p.m. ET); see Part IV, A for instructions

**Program Area e-mail for Submission of Letter of Intent** – [foodnutrition@nifa.usda.gov](mailto:foodnutrition@nifa.usda.gov)

**Application Deadline** – May 6, 2014, 2014 (5:00 p.m. ET)

**Total Program Funds** – Approximately \$9 million

**Proposed Budget Requests-**

- Standard Grants must not exceed \$500,000 total (including indirect costs) for project periods of up to 4 years.
- Conference, and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed.

**Program Area Priorities** – Each Application must address at least one of the following three Program Area Priorities:

**1. Improving Food Safety**

**Program Area Priority Code** – A1331

**Program Area Priority Contact** – Dr. Jeanette Thurston, (202) 720-7166 or [jthurston@nifa.usda.gov](mailto:jthurston@nifa.usda.gov)

- Develop and validate novel concentration and purification methods for the rapid, low-cost, and efficient isolation or capture of viable or infectious human pathogens from foods and/or environmental samples related to food production, harvesting and processing (for example, irrigation and processing water, soil, manure, food contact surfaces). Projects that include the development and validation of methods that are effective in multiple matrices and for multiple pathogens are preferred;
- Identify and characterize emerging or under-researched foodborne hazards (e.g., pathogens, chemicals, microbial toxins, and/or engineered nanoparticles) and develop effective control strategies. Studies to develop control strategies for known foodborne hazards on previously unrecognized food vehicles or on foods that are not commonly associated with a particular foodborne hazard are also encouraged; or  
Elucidate physical and/or molecular mechanisms that allow foodborne hazards (e.g., pathogens, chemicals, microbial toxins, and/or engineered nanoparticles) to attach onto and/or internalize into fresh and fresh-cut produce, nuts, and/or food contact surfaces associated with produce production and/or processing. Studies that elucidate the fate and/or dissemination of foodborne hazards in and/or on fresh produce, fresh-cut produce, nuts and/or food contact surfaces associated with produce production and/or processing are also encouraged.

**Program Area Priority Additional Information:**

- The study of multiple hazards is encouraged, where appropriate.
- The study of multiple fresh fruits, vegetables, and/or nuts is encouraged, where appropriate.
- To increase the potential impact of projects addressing the control of emerging hazards, inclusion of animal scientists, food microbiologists, veterinarians, engineers, social scientists, Extension educators, curriculum developers, economists, and others, where appropriate, is encouraged.
- For projects addressing the development of control strategies, identifying and promoting the development of economic and other incentives that lead to behavioral changes that promote food safety is encouraged.

**2. Improving Food Quality**

**Program Area Priority Code** – A1361

**Program Area Priority Contacts** – Dr. Jodi Williams, (202) 720-6145 or [jwilliams@nifa.usda.gov](mailto:jwilliams@nifa.usda.gov)

Enhance understanding of the physical, chemical, and biological properties of foods and food ingredients. Knowledge gained should be used to:

- Improve the quality, shelf-life, and sensory attributes of food.
- Improve the convenience and nutrient value of food.

- Develop novel (or improve existing) processing and/or packaging technologies that are safe, effective, and affordable.

**Program Area Priority Additional Information:—**

- Post-harvest projects that have a food safety component may be submitted, but the primary emphasis must be on improving food quality.
- For projects addressing technology development, identifying and promoting the development of economic and other incentives that lead to behavioral changes that promote food quality is encouraged.

### **3. Function and Efficacy of Foods**

**Program Area Priority Code – A1341**

**Program Area Priority Contacts –** Dr. Deirdra Chester (202) 401-5178 or [dnchester@nifa.usda.gov](mailto:dnchester@nifa.usda.gov).

Improve function and efficacy of foods, nutrients and/or other dietary bioactive components in promoting health.

- Applications should focus on the role of bioactive components in food in preventing inflammation or promoting gastrointestinal health. Justification must be provided for the relationship of the component(s) being studied to human health outcomes. Priority will be given to projects that use a whole food approach or that address health effects of a combination of two or more bioactive components found in food.

**Program Area Priority Additional Information:**

- Support will not be provided for research on the development of dietary supplements, research on dietary therapies for existing disease, or for the establishment, expansion, or maintenance of dietary databases. Surveys of the nutritional status of population groups are not acceptable for this program.

**Other Program Area Key Information applicable to ALL Food Safety, Nutrition, and Health priority areas 1-3:**

- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.
- Prior to submission, all applicants are encouraged to contact the “Program Area Priority Contact” listed above to discuss whether the project idea addresses the program area priorities.
- While upper limits are placed on grant requests and grant durations, this program area also strongly encourages proposals from investigators, who are in transition to new areas of investigation, particularly high risk/high return proposals that may require lower funding levels or shorter grant periods.
- Applications should consider sustainability issues related to the research being proposed. Sustainable technologies include those that balance the interactions between economic, environmental and social factors, while ensuring productivity levels that address current and future global food demands.
- Conference grants are not limited to the specified program area priorities and may broadly address all topic areas in food safety, food quality and/or nutrition.

## **4. Renewable Energy, Natural Resources, and Environment (RENRE)**

### **Background**

Healthy agroecosystems and the maintenance of supporting natural resources are essential to the sustained long-term productivity of agricultural goods and services. The sustainability of U.S. agriculture is threatened by the degradation and/or loss of ecosystem services<sup>1</sup> through natural processes or

<sup>1</sup> *Ecosystem services are the benefits to society from agroecosystems including carbon storage, water filtration, and habitat for wildlife and cultural values such as landscape views, and hunting and fishing.* Millennium Ecosystem Assessment <http://www.unep.org/maweb/en/index.aspx>, 2005.

anthropogenic (human) interventions such as reduced biological diversity, water and air pollution, and loss of soil quality.

Agroecosystems includes crop production systems, animal production systems (either intensive or extensive), and pasture, range, and forest lands that are actively managed to provide economic, societal, and environmental benefits for individuals, communities, and society at large. Sustainable management of agroecosystems requires improved understanding of interactions among physical, chemical, and biological processes and their response to changing conditions. It also requires scientific knowledge that integrates the complex interactions between management practices and natural processes in order to anticipate and avoid critical thresholds of irreversible damage or loss.

Research outcomes will model promising agricultural systems that have balanced human social needs<sup>2</sup> with natural systems to produce more food in more sustainable ways, and contribute to use-inspired foundational research that adds to the understanding of sustainable production of agroecosystems while retaining needed ecosystems services. Sustainability implies the interactions among—societal, economic, and environmental dimensions working across disciplines, looking long term across multiple scales, understanding responses in terms of resilience and adaptation, and on the synergies among responses. This program anticipates funding projects that reflect diverse spatial and temporal scales across geographic diversity.

The program aligns with the 2012 Research, Education, and Economics Action Plan and specifically addresses Goal 3, Sustainable Use of Natural Resources, Landscape Scale Conservation and Management to: 1) improve fertilizer recommendations, optimize production and environmental goals, as well as management technologies and improved models to evaluate nitrogen's life cycle for agricultural system needed to enhance crop nitrogen use and to mitigate nitrogen losses, and 2) develop new types of cropping systems and integrated crop-livestock systems that utilize biodiversity and generate a broader set of ecosystem services.

In FY 2014, AFRI invites Research Project applications for Standard, Conference, and FASE Grant types relevant to the two priority areas of the Renewable Energy, Natural Resources and Environment.

**Letter of Intent Deadline – March 12, 2014** (5:00 p.m. ET); see Part IV, A for instructions

**Program Area e-mail for Submission of Letter of Intent –** [naturalres@nifa.usda.gov](mailto:naturalres@nifa.usda.gov)

**Application Deadline – June 4, 2014** (5:00 p.m. ET)

**Total Program Funds –** Approximately **\$9 million**

**Proposed Budget Requests**

- Standard Research Grants must not exceed \$500,000 total (including indirect costs) for project periods of up to 4 years.
- Conference, and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed.

The following Program Area Priorities seek to improve the understanding of fundamental processes and interactions among the economic, environmental, and social pillars of sustainability in actively managed agroecosystems, rangelands, and/or forests.

**Program Area Priorities** – Each application must address one of the following two Program Area Priorities described below:

**1. Nitrogen and Phosphorus Cycling**  
**Program Area Priority Code – A1401**

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<sup>2</sup> ESCOP social science “gap analysis,” and the NSF analysis of about a year ago (12/11) “Rebuilding the Mosaic,” ([http://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=122464](http://www.nsf.gov/news/news_summ.jsp?cntn_id=122464)), the framing of the NSF LTER (and other work at NSF) as coupled human/social and ecological systems, etc.

**Program Area Priority Contacts** – Dr. Ray Knighton (202) 401-6417 or [rknighton@nifa.usda.gov](mailto:rknighton@nifa.usda.gov)

This Program Area Priority seeks projects that evaluate the physical and biogeochemical (including microbial) processes affecting the flow, fate and transport, transformation, movement, and storage of nitrogen and phosphorus. There are two priority areas:

- Projects that address management practices and/or processes across soil-air-water interfaces that will lead to substantial improvements in nutrient use efficiency or improvements to impaired natural resources within a managed agroecosystem. Applicants should focus on the interactions between the social and human dimensions with environmental and economic dimensions and must explain how a better understanding of the fundamental processes will help sustain ecosystem services.
- Projects will offer foundational research that supports decision-support tools for assessment of ecosystem services like the following: 1) Predictive and/or hind-casting tools to assess control technologies to mitigate nitrogen and phosphorus movement or impairment; or 2) Improve process-based models to analyze nitrogen and phosphorus life cycles in agroecosystems, rangelands, and forests.

High-risk/high reward projects should demonstrate a transformative approach to the problem (not an incremental improvement over current practices) while also making a case for feasibility. This program seeks projects that offer new approaches to increasing the efficiency of nitrogen and/or phosphorous assimilation in cropping systems by at least 50% over current levels that may be measured by nutrient use efficiency criteria.

## **2. Agroecosystem Management**

**Program Area Priority Code – A1451**

**Program Area Priority Contacts** – Dr. Michael Bowers (202) 401-4510 [mbowers@nifa.usda.gov](mailto:mbowers@nifa.usda.gov)  
and Dr. Jill Auburn (202)-720-2635 [jauburn@nifa.usda.gov](mailto:jauburn@nifa.usda.gov)

This Program Area Priority seeks projects that develop and evaluate innovative agroecosystem management practices and systems for their potential to enhance ecosystem services. There are two priority areas:

- Projects that connect biodiversity specifically as an ecosystem service to production system functionality, productivity, socioeconomic viability, sustainability and the production of other ecosystem services related to air, water, soil, habitat and land use. Biodiversity is defined here in a broad context to include genetic diversity, crop and/or landscape diversity over space and/or time, and/or species diversity in both the managed and unmanaged components of the agroecosystem. The focus can be at the field, farm or landscape level, however, the relevance of the project to management practices and systems must be made very clear.
- Agroecosystem projects designed to develop management systems that significantly increase the output and/or value of at least three ecosystem services compared with the current management system for the region. Applicants are expected to select ecosystem services from at least two categories (provisioning, regulating, supporting or cultural) as defined by the Millennium Ecosystem Assessment with an explicit estimate of the magnitude of increase expected for each ecosystem service selected. The approach may be genetic, management, technology or a combination.

**NOTE:** Projects that focus primarily on economics should apply instead to the Agricultural Economics and Rural Communities (AERC) Program Area in this solicitation

**Other Program Area Key Information applicable to ALL Renewable Energy, Natural Resources and Environment Priorities:**

- Applicants may include one or more of the following implementation strategies:

- Long Term Research--The funded projects may partner with research programs and institutions with existing networks that perform “long-term” (10-20 years) research functions such as the USDA Long-Term Agroecosystem Research Network (LTAR), NSF Long Term Ecological Research (LTER) or others.
- Data Integration for Decision Making--Projects may focus on organizing and managing large data sets about economic, environment and social factors and their interactions to assess sustainability risk, valuing biodiversity and ecosystem services for landscape planning, and management or to make key policy and on farm decisions. Sources of data might include information from the Millennium Ecosystem Assessment, LTAR data, the USDA Life Cycle Assessment (LCA) Digital Commons or others.
- Adaptive Management--Project may focus on developing and accessing models and approaches for applying adaptive management strategies for more efficient and faster responses to shifting climate and other unforeseen natural or man-made events that affect agriculture and food production.
- NIFA is requesting applications for conferences/workshops that result in documented synthesis of research and inform future research priorities that may include meta-analysis that emphasizes current and future critical needs. All conferences/workshops are assumed to be offered as a comprehensive consideration of the three pillars of sustainability and interactions among the components. Conferences/workshops might include topics like: science innovation for sustainable agriculture, adaptive management, data management and decision making using the USDA Digital Commons, long-term data for decision making, new research collaborations or Science, Technology, Engineering and Mathematics (STEM) through minority serving institutions.
- Research projects may provide students with research fellowships and internships through stipends, tuition, fees, and travel to participate in scientific conferences or workshops or participate in community involvement activities at the P-20 level. These activities may also include an international experience and completion of a 1-3 month cross-disciplinary internship with an industry partner or national laboratory.
- All systems under study must be strongly justified in terms of importance to sustainability.
- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions (1890, 1994 and HSI), and/or EPSCoR states are strongly encouraged. This program encourages applicants to address strategies that facilitate the adoption of sustainable practices by different groups with different cultural perspectives.
- Collaboration with international partners is encouraged when appropriate; however, applications must be submitted by eligible U.S. institutions.
- Logic models are encouraged and may be useful for clarification of project goals, objectives and expected impacts.
- Letters of intent must identify the specific priority area, sub-priority area, and planned indicators to evaluate success.

## 5. Agriculture Systems and Technology

### Background

This Program Area emphasizes the interrelationships between agricultural system components to develop the next generation of engineered systems, products, processes, and technologies. It blends biological, physical, and social sciences. This approach will lead to sustainable, competitive, and innovative solutions for U.S. and global agriculture and food production. Some key disciplinary contributors may include: engineering; agricultural economics; chemistry; microbiology; soil science; animal and plant sciences; veterinary medicine; genetics; social sciences; behavioral sciences; food safety; physics; materials science; and toxicology. To the extent possible, applicants are encouraged to incorporate interdisciplinary sciences. By doing so, projects are more likely to incorporate varying dimensions of sustainability (economic, environmental, and social) and have a greater impact on agricultural problems. The broad list of topics encompassed by this area includes, but is not limited to new uses and products from traditional and nontraditional crops, animals, byproducts, and natural resources; robotics, automation, precision and

geospatial technologies, energy efficiency, computing, and expert systems; new hazard and risk assessment and mitigation measures; and water quality and management and irrigation.

The Agriculture Systems and Technology program area addresses the following priorities within the 2008 Farm Bill: E. Agriculture Systems and Technology - Engineering products and processes (subpriorities i. new uses and new products from traditional and nontraditional crops, animals, byproducts, and natural resources; ii. robotics, energy, efficiency, computing, and expert systems; iii. new hazard and risk assessment and mitigation measures; and iv. water quality and management).

The Agriculture Systems and Technology program area directly aligns with the Research, Education, and Economics Action Plan ([www.ree.usda.gov/ree/news/USDA\\_REE\\_Action\\_Plan\\_02-2012\\_2.pdf](http://www.ree.usda.gov/ree/news/USDA_REE_Action_Plan_02-2012_2.pdf)) and specifically addresses: Goal 1. Local and Global Food Supply and Security and Goal 3. Sustainable Use of Natural Resources.

In FY 2014, AFRI invites Research Project applications for Standard, Conference, and FASE Grant types relevant to the two priority areas of the Agriculture Systems and Technology Program Area described below.

**Letter of Intent Deadline- February 5, 2014** (5:00 p.m. ET); see Part IV, A for instructions  
**Program Area e-mails for Submission of Letter of Intent -** [epp@nifa.usda.gov](mailto:epp@nifa.usda.gov) for Engineering, Products, and Processes; and [nano@nifa.usda.gov](mailto:nano@nifa.usda.gov) for Nanotechnology for Food and Agriculture  
**Application Deadline: April 9, 2014** (5:00 p.m. ET)

**Total Program Funds:** Approximately \$6 million

**Proposed Budget Requests –**

- Standard Grants must not exceed \$500,000 total (including indirect costs) for project periods of up to 5 years.
- Conference, and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed.

**Program Area Priorities –** Each Application must address at least one of the following two Program Area Priorities:

**1. Engineering, Products, and Processes**

**Program Area Priority Code –** A1521

**Program Area Priority Contacts –** Dr. Daniel Schmoldt (202) 720-4807 or [dschmoldt@nifa.usda.gov](mailto:dschmoldt@nifa.usda.gov)  
and Ms. Charlotte Kirk Baer (202) 720-5280 or [cbaer@nifa.usda.gov](mailto:cbaer@nifa.usda.gov)

This Program Area Priority focuses on engineering, products, and processes to improve agriculturally relevant plant, animal, forestry, and natural resource systems. Applications must have a significant engineering component. Engineering is defined as *the application of scientific and mathematical principles to practical ends such as the design, manufacture, and operation of efficient and economical structures, technologies, machines, processes, and systems.* Some broad research emphasis areas include (but are not limited to):

- Enable engineering, computing, and information systems for forestry and natural resources or for plant and animal production, processing, and distribution;
- Improve the efficiency of energy and water use;
- Minimize and/or utilize waste and byproducts generated in agricultural and food systems;
- Develop and test risk assessment and mitigation measures to reduce hazards to agricultural workers; and
- Refine the sustainability of agricultural and forestry systems that balance economic, environmental, and social outcomes.

**NOTE:** Applications that deal with improving food quality, safety, or nutritional value should be submitted to the Food Safety, Nutrition, and Health Program Area in this solicitation.

## **2. Nanotechnology for Agricultural and Food Systems**

**Program Area Priority Code** – A1511

**Program Area Priority Contacts** – Dr. Hongda Chen (202) 401-6497 or [hchen@nifa.usda.gov](mailto:hchen@nifa.usda.gov) and  
and Dr. Mervalin Morant (202) 401-6602 or [mmorant@nifa.usda.gov](mailto:mmorant@nifa.usda.gov)

Nanoscale science, engineering, and technology embrace opportunities in a broad range of critical challenges facing agriculture and food systems. This Priority Area encourages applications in the following broad areas: innovative ideas and fundamental sciences to develop nanotechnology enabled solutions for food security through improved productivity, quality, and biodiversity; improved nutritional value of feeds and more effective therapies that significantly impact animal health and wellness; enhanced food safety and biosecurity; and increased protection for natural resources, the environment, and agricultural ecosystems. The Program Area Priority scope includes, but is not limited to:

- Novel uses and high value-added products of nano-biomaterials of agricultural and forest origins for food and non-food applications; [Applications involving intentional addition of nanoparticles or nanostructured materials into foods for human consumption will not be solicited this year.]
- Nanoscale-based sensing mechanisms and smart sensors for reliable and cost-effective early detection of insects, diseases, pathogens, chemicals, and contaminants;
- Monitoring physiological biomarkers for optimal crop or animal productivity and health;
- Minimally invasive field survey tools for agricultural production;
- Precision agriculture technologies including applications of agricultural chemicals and water resources;
- Assessment and analysis of the perceptions and social acceptance of nanotechnology and nano-based food or non-food products by the public and agriculture and food stakeholders, using appropriate social science tools; and
- Discovery and characterization of nanoscale phenomena, processes, and structures relevant to agriculture and food.

To ensure responsible development and deployment of nanotechnology and reap the benefits, applications should consider incorporating proper risk assessment studies as appropriate. These may include characterization of hazards and exposure levels, transport and fate of nanoparticles or nanomaterials in crops, soils (and soil biota), and livestock. This may also include animal feed formulations and processes that utilize novel materials or develop new nanostructured materials or nanoparticles that are bio-persistent in digestive pathways. Finally, all the applications, especially those with potential commercial impact, are encouraged to include economic analyses of anticipated benefits to agriculture, food, and society.

Nanotechnology is defined by the National Nanotechnology Initiative (NNI) as “...the understanding and control of matter at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable applications. Encompassing nanoscale science, engineering and technology, nanotechnology involves imaging, measuring, modeling and manipulating matter at this length scale” (<http://nano.gov/>). This program area priority encourages new platforms of nanotechnology in the area of higher order assembled systems, and more complex systems that include the exploitation of bio-nano interfaces, hybrid bio-inorganic systems, systems biology, and synthetic biology.

**NOTE:** Applications specifically dealing with engineered nanoparticles to attach onto and/or internalize into fresh and fresh-cut produce, including nuts, should be submitted to the Improving Food Safety priority (A1331) of the Food Safety, Nutrition, and Health Program Area in this RFA.

### **Other Program Area Key Information applicable to ALL Agricultural Systems and Technology priorities 1-2:**

- While this Program Area encourages conference grant applications on any topic related to the program area priorities above, this program area is particularly interested in conference/workshop applications that bring together stakeholders, researchers, extension specialists, and technology providers to develop a roadmap for developing and delivering the next generation of agricultural technologies, including but not limited to precision agriculture, information management, and nanotechnology. These technologies should be smarter, more user friendly, and readily adapt to a wide variety of crops and producers (including smaller-scale and limited-resource) and their unique applications (with little modification) in support of sustainable production practices and systems.
- This program area is particularly interested in conference/workshop applications that bring together stakeholders, researchers, extension specialists, educators, and technology providers to advance understanding and application of transformative systems approaches to enhance agricultural and food system sustainability. By “transformative systems” we mean those that offer major and synergistic advances toward the multiple goals of sustainability—productivity, profitability, environmental and social dimensions. A conference/workshop should bring together state-of-the-art knowledge on how to identify and assess transformative systems agriculture, advance the science involved, and produce a summary of its conclusions for publication and other distribution. This program area encourages applicants to draw from knowledge of systems science and transformational change in fields outside of agriculture, but with a focus on their application to agricultural and food systems.
- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.
- Applicant must describe the potential of the proposed work to support or achieve substantial gains in efficiencies of production; the probability that the application of technology will resolve constraints or result in positive impacts; and potential outcomes in terms of expected social and environmental benefits of research (see Part I, B). Both transformative and incremental solutions are encouraged.
- Where applicable, indicate plans to show adequate statistical rigor, including sample size justification.
- Provide a plan to disseminate or publicize results to the public in a timely manner.
- Applicants are also encouraged to consider the National Robotics Initiative interagency program. Additional information can be found under Part I, B.

## **6. Agriculture Economics and Rural Communities (AERC)**

### **Background**

The agricultural and forestry sectors increasingly face major economic, environmental and social challenges while sustaining agricultural production for a growing worldwide population. To address the challenges of increasing agricultural production and a sustainable production system while enhancing the quality of life in rural areas, continued research and the development of innovative ideas, strategies and new technologies are needed.

The agricultural economy and rural communities face a complex set of challenges due to significant demographic changes, sparse settlement patterns, geographic isolation, and often a subordinate relationship to urban centers. Understanding the dynamics of the critical social, economic, and environmental systems that underlie rural communities is fundamental to addressing their growth, sustainability, and resilience. The challenges are multi-faceted and complex and to adequately assess and understand them we need to consider social, behavioral, economic, physical, environmental, institutional, and other factors contributing to or arising from these challenges. Given the opportunities and challenges, the primary goal of this priority area is to promote economically, socially, and environmentally sustainable agriculture and resilient rural communities

This AERC Program Area supports projects involving rigorous research and analysis that improves the sustainability of agricultural and related activities in rural areas, protects the environment, enhances quality of life, and alleviates poverty. Topical issues include, but are not limited to, the interactions

between agriculture, environment and communities in rural areas; demographic changes and impacts; consumer preferences or behavior; decision-making under uncertainty; market structure and performance; policy design and impact; or agriculture's impact on the environment. The AERC Program Area primarily supports social and behavioral science disciplines such as economics, sociology, political science, history, geography and others. Interdisciplinary efforts involving social and nonsocial science disciplines are also invited. Domestic and international partnerships that leverage resources and are mutually beneficial to the applicant, other U.S. states, or other countries are encouraged.

The AERC Program Area will support two types of project applications in the support of social science research: a) research projects that broadly address aspects of (1) Economics, Markets and Trade, or (2) Environmental and Natural Resource Economics and Policy; and b) integrated projects, (project components must include at least two of the following: research, education or extension), which address issues related (1) Small and Medium-sized Farms, (2) Entrepreneurship, Technology and Innovation Policy, or (3) Rural Families, Communities and Regional Development.

The AERC Program Area addresses the following priorities within the 2008 Farm Bill: D. Renewable Energy, Natural Resources, and Environment – Natural resources and environment (subpriorities ii. biological and physical bases of sustainable production system; and v. forestry); and F. Agriculture Economics and Rural Communities – Markets, trade and policy (subpriorities i. strategies for entering into and being competitive in domestic and overseas markets; ii. farm efficiency and profitability, including the viability and competitiveness of small and medium-sized dairy, livestock, crop and other commodity operations; iii. new decision tools for farm and market systems; iv. choices and application of technology; v. technology assessment; and vi. new approaches to rural development, including rural entrepreneurship).

The AFRI AREC program area directly aligns with the Research, Education, and Economics Action Plan ([www.ree.usda.gov/ree/news/USDA\\_REE\\_Action\\_Plan\\_02-2012\\_2.pdf](http://www.ree.usda.gov/ree/news/USDA_REE_Action_Plan_02-2012_2.pdf)) and specifically addresses: Goal 1. Local and Global Food Supply and Security by developing and transferring knowledge and skills that promote sustainable agricultural systems locally, regionally, and globally for all types of agriculture production systems, thereby enhancing domestic and international food security and strengthening American agriculture; and Goal 7. Rural-Urban Interdependence and Prosperity by providing effective research, education, and extension that inform public and private decision making in support of rural and community development.

In FY 2014, AFRI invites Integrated and Research Project applications for Standard, Conference, and FASE Grant types relevant to the five priority areas of the Agriculture Economics and Rural Communities Program Area described below.

**Letter of Intent Deadline – February 19, 2014** (5:00 p.m. ET); see Part IV, A for instructions  
**Program Area e-mail for Submission of Letter of Intent –** [EMT@nifa.usda.gov](mailto:EMT@nifa.usda.gov) for Economics, Markets and Trade, A1641; [ENRE@nifa.usda.gov](mailto:ENRE@nifa.usda.gov) for Environmental and Natural Resource Economics, A1651; [SMF@nifa.usda.gov](mailto:SMF@nifa.usda.gov) for Small and Medium-Sized Farms, A1601; [ETI@nifa.usda.gov](mailto:ETI@nifa.usda.gov) for Entrepreneurship, Technology and Innovation, A1621; and [RCRD@nifa.usda.gov](mailto:RCRD@nifa.usda.gov) for Rural Communities and Regional Development, A1631.

**Application Deadline – April 28, 2014** (5:00 p.m. ET)

**Total Program Funds –** Approximately **\$10 million**

**Proposed Budget Requests –**

- Standard Grants must not exceed \$500,000 total (including indirect costs) for project periods of up to 5 years.
- Conference, and Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed

**Program Area Priorities for Research Projects** – Applicants must address one of the following two Program Area Priorities:

(NOTE: Refer to Part II, C and Part III, A for Research Project Type definitions and eligibility information).

**1. Economics, Markets and Trade**

**Program Area Priority Code** – A1641

**Program Area Priority Contact** – Dr. Robbin Shoemaker (202) 720-5468 or [rshoemaker@nifa.usda.gov](mailto:rshoemaker@nifa.usda.gov) and Dr. Fen Hunt (202) 720-4114 or [fhunt@nifa.usda.gov](mailto:fhunt@nifa.usda.gov)

This priority research area encourages the development of theories, methods and applications of economic and other social science disciplines. This Priority Area encourages applications in the following broad areas: agricultural market structure and performance in the supply chain; international trade; production and resource use; consumer behavior and behavioral economics; farm labor markets and immigration and policy; agricultural policy design and impacts; technology development and adoption; and science and innovation policy. The Program Area Priority scope includes, but is not limited to:

- Examine the economic impacts of local markets on food supply, demand and quality.
- Strategies and models of coexistence of multiple crop technologies throughout the supply chain.
- The role of behavioral economics or mechanism design in nutrition and food safety and other public policy issues.
- The design, evaluation, and impact of various policies, e.g., food, agricultural, environmental, rural, science.
- Understanding the economics of food waste and loss within the supply chain, i.e., processing, transportation, marketing, and consumption and the design of incentive mechanism to minimize losses.
- Social, behavioral and economic sources and barriers to productivity growth, including incentives for collaboration between the public and private sectors for advancing food, agricultural and environmental sciences.
- Novel approaches to measuring scientific effort, impacts and outcomes for effective quantitative and qualitative research evaluation.

**2. Environmental and Natural Resource Economics**

**Program Area Priority Code** – A1651

**Program Area Priority Contact** – Dr. Robbin Shoemaker (202) 720-5468 or [rshoemaker@nifa.usda.gov](mailto:rshoemaker@nifa.usda.gov) and Dr. Fen Hunt (202) 720-4114 or [fhunt@nifa.usda.gov](mailto:fhunt@nifa.usda.gov)

This priority area examines the interrelationship of natural resources, the environment with agricultural and rural communities. Research projects funded through this priority will advance theories, methods and applications that contribute to understanding an ecological approach to agriculture that embraces production and sustainable resource management simultaneously. This priority area also provides coordination with the Renewable Energy, Natural Resources, and Environment (RENRE) Program Area in this solicitation. Research topics include but are not limited to:

- Impacts or implications of agriculture, resource conservation and management.
- Conservation and environmental policies affecting agriculture and rural communities.
- Urbanization and land use change.
- The economics of water resource management.
- Methodological advances in non-market valuation and valuation of ecosystem services.
- Incentive mechanisms and policies designed to promote resource conservation.

**Program Area Priorities for Integrated Projects** – Applicants must address one of the following three Program Area Priorities:  
(NOTE: Refer to Part II, C and Part III, A for Integrated Project Type definitions and eligibility information).

**3. Small and Medium-Sized Farms**

**Program Area Priority Code** – A1601

**Program Area Priority Contact** – Dr. Denis Ebodaghe (202) 401-4385 or [debodaghe@nifa.usda.gov](mailto:debodaghe@nifa.usda.gov); and Dr. Jill Auburn (202)-720-2635 or [jauburn@nifa.usda.gov](mailto:jauburn@nifa.usda.gov)

This Program Area Priority focuses on work to develop and/or adopt new disciplinary or multidisciplinary models to assist agricultural (farm, forest, or ranch) landowner decision making with respect to appropriate scale management strategies and technologies to enhance economic efficiency and sustainability, including the viability and competitiveness of small and medium sized dairy, poultry, livestock, crop, forestry, and other commodity operations. The Program Area Priority scope includes, but is not limited to:

- Evaluate and implement strategies to enhance access to markets by small and mid-sized farms.
- Research and develop effective strategies to aid in the development of efficient local and regional food systems.
- Assess the impacts of changes in input costs and markets, including farm labor (and immigration policies), credit, microfinance, and insurance markets (including healthcare), on farm entry, transition, and economic viability and in turn, implement programs to assist beginning, small and medium-sized farms.
- Examine and undertake outreach activities regarding private and public options or strategies that can inform relevant public policy to enhance small and mid-sized farm well-being.

**4. Entrepreneurship, Technology and Innovation**

**Program Area Priority Code** – A1621

**Program Area Priority Contact** – Dr. Jill Auburn (202)-720-2635 or [jauburn@nifa.usda.gov](mailto:jauburn@nifa.usda.gov); and Dr. Denis Ebodaghe (202) 401-4385 or [debodaghe@nifa.usda.gov](mailto:debodaghe@nifa.usda.gov)

This Program Area Priority is designed to promote research, education and or extension activities to enhance economic opportunity and well-being of entrepreneurs in rural communities, beyond the farm-gate. Projects will enhance the development of rural entrepreneurship; enhance the technology transfer from colleges, universities and other research laboratories to rural manufacturers. The emphasis areas of this Program Area Priority include, but are not limited to:

- Developing new and creative economic or social opportunities for rural community vitality, including technology adoption, microfinancing, innovative business opportunities and strategies (e.g., to promote agro-tourism, arts, and e-commerce).
- Identifying or evaluating the implications and impact of small business development strategies to promote sustainability of small and medium-sized farms and rural communities.
- Developing enhanced means for transferring new knowledge and innovations from the lab to the entrepreneur.

**5. Rural Communities and Regional Development**

**Program Area Priority Code** – A1631

**Program Area Priority Contact** – Dr. Jill Auburn (202)-720-2635 or [jauburn@nifa.usda.gov](mailto:jauburn@nifa.usda.gov); and Dr. Denis Ebodaghe (202) 401-4385 or [debodaghe@nifa.usda.gov](mailto:debodaghe@nifa.usda.gov)

This Program Area Priority aims to evaluate the institutional, sociological, or economic factors affecting decision making and application of technology and in turn, promote the adoption of private strategies and public policy options to enhance investments in agricultural and rural communities. It also seeks to enhance adoption of optimal regional land use and architectural decisions, including regional

clusters, that protect the rural environment and promote economic development, health and well-being while alleviating poverty and enhancing rural quality of life. The Program Area Priority scope includes, but is not limited to:

- Develop research and education strategies to examine and advance factors contributing to a “wealth-based” approach to rural economic development and implement education and/or extension strategies to enhance wealth creation.
- Develop and model networks of regional assets or factors, (e.g., firms, organizations, and communities and infrastructure), and the links between them that aid creation and nurture rural economic development.
- Explore strategies to promote community and regional innovation, workforce development, address human capital challenges, poverty, income and inequality, through promotion of Science, Technology, Engineering and Mathematics/ Science, Technology, Engineering, Agriculture and Mathematics (STEM/STEAM), in rural areas.
- Examine transportation decisions and their implications for agricultural and rural communities.
- Develop innovative economic development policies and practices. Examine comprehensive strategies and promote the development of a relevant mix of factors (e.g., colleges, airports, amenities, telecommunications, etc.) that contribute to effective growth strategies.

**Other Program Area Key Information applicable to ALL Agriculture Economics and Rural Communities priority areas 1-5:**

- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.
- Applications must include a section providing a justification for the system studied relevant to improving economic, social, and environmental sustainability of agriculture.
- This program area will not fund the research and development of physical technologies and tools; however decision-support aids or tools are welcomed.
- This program area does not support new business start-up or technology development.

## **7. Critical Agricultural Research and Extension (CARE)**

### **Background**

Despite prior investments in basic and applied research, critical problems continue to impede the efficient production and protection of agriculturally-important plants and animals. These problems may be local, regional, or national, and may call for work focused on one or more scientific disciplines. However, all need immediate attention to meet producer needs. Finding and implementing solutions to these critical problems require partnership and close coordination among researchers, extension experts, and producers. Funded projects will quickly yield solutions or practices that can be rapidly implemented by producers.

The CARE program area addresses the following priorities of the 2008 Farm Bill: A. Plant Health and Production and Plant Products; B. Animal Health and Production and Animal Products; C. Food Safety, Nutrition and Health; D. Renewable Energy, Natural Resources, and Environment; E. Agriculture, Systems and Technology; and F. Agriculture Economics and Rural Communities

The AFRI CARE program area directly aligns with the Research, Education, and Economics Action Plan ([www.ree.usda.gov/ree/news/USDA\\_REE\\_Action\\_Plan\\_02-2012\\_2.pdf](http://www.ree.usda.gov/ree/news/USDA_REE_Action_Plan_02-2012_2.pdf)) and specifically addresses: Goal 1 – Local and Global Food Supply and Security; Goal 2 – Responding to Climate and Energy Needs; Goal 3 – Sustainable Use of Natural Resources; Goal 5 – Food Safety; Goal 6 – Education and Science Literacy; and Goal 7 – Rural-Urban Interdependence and Prosperity.

In FY 2014, AFRI invites Integrated research and extension applications for Standard and FASE Grant types relevant to the priority of the CARE Program Area described below.

**Letter of Intent Deadline** – June 4, 2014 (5:00 p.m. ET); see Part IV, A for instructions

**Program Area e-mail for Submission of Letter of Intent**– [CriticalAg@nifa.usda.gov](mailto:CriticalAg@nifa.usda.gov)

**Application Deadline** – August 7, 2014 (5:00 p.m. ET)

**Total Program Funds** – Approximately \$5 million

**Proposed Budget Requests -**

- Standard Grants must not exceed \$150,000 total (including indirect costs) for project periods of up to 3 years and are not renewable.
- Food and Agricultural Science Enhancement (FASE) Grants must adhere to the guidelines outlined beginning in Part II, D. 3.
- Requests exceeding the budgetary guidelines will not be reviewed.

**Program Area Priorities** – Each application must address the following Program Area Priority:

1. **CARE**

**Program Area Priority Code** – A1701

**Program Area Priority Contact** – Dr. Martin Draper (202) 401-1990 or [mdraper@nifa.usda.gov](mailto:mdraper@nifa.usda.gov)

- Develop and implement solutions to critical producer problems associated with animal and crop production, protection, or product quality. Emphasis will be placed on achieving results that can be applied by the producer as quickly as possible following project completion. Applications should include justification of why the issue is critical and how project outcomes will rapidly impact the stakeholder community. The project must include stakeholders.

**Other Program Area Requirements:**

- Producers and/or producer group engagement is required during development of the application to ensure that funded projects are designed to provide solutions to stakeholder needs. Further, these stakeholders should also be involved in the implementation of the project.
- Strict focus on a short to medium-term application of results is an important component of this program area. Projects must demonstrate outcomes within the project period.
- Projects will focus on critical problems faced by producers, including those implementing innovative production methods.
- Projects must have a high degree of coordination between research and extension components. Both functions should be engaged from inception through implementation of the project.
- Project applicants must identify if their project is extension-led or research-led.
- All applications must include a logic model detailing the activities, outputs, and outcomes of the proposed project. See Part IV C.3g for details on how to create a logic model and how to attach this information to your application.
- Project budgets should reflect how the research and extension activities will be achieved, including how they are integrated.
- Priority will be given to applications that demonstrate collaboration with recognized stakeholder groups and submitted by investigator(s) with experience in using local, regional, or national resources and in conducting time-critical research and extension.
- All applications must adhere to the requirements beginning in Part IV.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.

**SPECIAL NOTE:** Applications to this program should uniquely fit into this program and should not be eligible for submission to other existing AFRI program areas or priority areas.

## 8. Exploratory

### Background

This new program area encourages continuous development of innovative ideas that will position US Agriculture at the global forefront. These developments will lead to quantum leaps in the agricultural fields. They will address the challenges that have never been addressed before in the areas of food security, climate change, environmental quality and natural resources, nutrition, obesity, food safety, strong families and vibrant communities, and thriving youth.

The Exploratory Program Area addresses the following priorities of the 2008 Farm Bill: A. Plant Health and Production and Plant Products; B. Animal Health and Production and Animal Products; C. Food Safety, Nutrition and Health; D. Renewable Energy, Natural Resources, and Environment; E. Agriculture, Systems and Technology; and F. Agriculture Economics and Rural Communities

The AFRI Exploratory Research Program Area directly aligns with the Research, Education, and Economics Action Plan ([www.ree.usda.gov/ree/news/USDA\\_REE\\_Action\\_Plan\\_02-2012\\_2.pdf](http://www.ree.usda.gov/ree/news/USDA_REE_Action_Plan_02-2012_2.pdf)) and specifically addresses: Goal 1 – Local and Global Food Supply and Security; Goal 2 - Responding to Climate and Energy Needs; Goal 3 – Sustainable Use of Natural Resources; Goal 4 – Nutrition and Childhood Obesity; Goal 5 – Food Safety; Goal 6 – Education and Science Literacy; and Goal 7 – Rural Prosperity/ Rural-Urban Interdependence.

In FY 2014, AFRI invites Research Project applications for Standard Grant type relevant to the priority of the Exploratory Program Area described below.

**Letter of Intent Deadline** – accepted anytime through September 30, 2014. See Part IV, A for instructions

**Program Area e-mail for Submission of Letter of Intent** – [exploratory@nifa.usda.gov](mailto:exploratory@nifa.usda.gov)

**Application Deadline** – accepted year-round depending on acceptance of the Letter of Intent and availability of funds

**Total Program Funds** – Approximately \$2 million

### Proposed Budget Requests -

- Standard Grants must not exceed \$100,000 total (including indirect costs) for project periods of up to one year and are not renewable.
- Requests exceeding the budgetary guidelines will not be reviewed.

**Program Area Priority** – Each application must address the following Program Area Priority:

#### 1. Exploratory Research

**Program Area Priority Code** – Provided upon invitation to submit the proposal after acceptance of the Letter of Intent.

**Program Area Priority Contact** – Dr. Michel Bowers (202) 401-4510 or [mbowers@nifa.usda.gov](mailto:mbowers@nifa.usda.gov)

This program area priority (program) provides support for research projects that develop proof of concept for untested novel ideas. This includes “high risk - high impact” work that will lead to a significant change in US agriculture.

This program area priority focuses on:

- New and emerging innovative ideas;
- Application of new knowledge or approaches;
- Tools required to have a paradigm shift in the field; and/or
- Rapid response to natural disasters and similar unanticipated events.

This program area priority addresses the overall priorities of AFRI.

**Other Program Area Priority Requirements:**

- Investigators **must contact the program area priority contact** listed above to seek input on whether the proposed project is appropriate for this program before submitting a letter of intent.
- Proposals will be accepted at any time of the FY 2014.
- The project narrative is restricted to a maximum of five pages, and must have a clearly articulated and compelling justification for the topical area, and a description of methods to be used, anticipated results, next steps and plans for seeking additional funding.
- The proposal must include a clear description as to why it is appropriate for Exploratory Research Program Area Priority, and not appropriate for the existing program area priorities under AFRI.
- A budget justification and curriculum vitae of the primary and collaborating investigators are required.
- The proposal preparation instruction deviates from the standard proposal preparation instructions contained in this RFA; other than that, the proposal must follow the instructions in this RFA and in the NIFA Gran.gov Application Guide.

**SPECIAL NOTE:** The Exploratory Research mechanism should not be used for projects that are appropriate for submission as competitive grants proposals to the various Agriculture and Food Research Initiative (AFRI) program area priorities. It is not the purpose of Exploratory Research program area priority funds to supplement formula funded or special grant projects.

**Review Criteria**

- The scientific merit of the proposed activity;
- Appropriateness of the proposed research for developing proof of concept of new and untested ideas including high risk research that leads to a significant change in the field;
- The applicant's previous experience and background along with the proposed activities; and
- Relevance of the project to sustainable U.S. agriculture, the environment, human health and well-being, and rural communities.

**Other Program Area Key Information applicable to Exploratory Research Priority Area:**

- All applications must adhere to the requirements beginning in Part IV unless specific instructions are given under this program area priority and by the program area priority contact.
- Applications from, and collaborations with, small to mid-sized institutions, minority-serving institutions, and/or EPSCoR states are strongly encouraged.

## **PART II – AWARD INFORMATION**

### **A. Available Funding**

The National Institute of Food and Agriculture is currently operating under temporary appropriations as part of the Continuing Resolution (CR) providing funds through January 15, 2014. Based on the current CR, NIFA anticipates the amount available for the AFRI program in FY 2014 will be approximately \$275 million. Adjustments will be made to program allocations once the FY 2014 appropriations are finalized. Of this amount, no less than 30 percent will be made available to fund integrated research, education, and extension programs. Of the AFRI funds allocated to research activities, section 7406 of the FCEA directs 60 percent of the grants for fundamental (or basic) research and 40 percent of the grants for applied research. Of the AFRI funds allocated to fundamental research, not less than 30 percent will be directed toward research by multidisciplinary teams. It is anticipated that no less than 10 percent of the FY 2014 funds will be made available for Food and Agricultural Science Enhancement (FASE) Grants, and no more than two percent of the funds available for fundamental research will be made available for Equipment Grants. AFRI funds may be used to support applications submitted to supplemental AFRI RFAs and/or solicitations for multi-agency programs in which AFRI is and will be participating.

In FY 2014, it is anticipated that approximately \$ 82 million will be made available to support new awards within the AFRI Foundational Program. Adjustments will be made to program allocations once the FY 2014 appropriations are finalized.

Awards issued as a result of this RFA will have designated the Automated Standard Applications for Payment System (ASAP), operated by the Department of Treasury's Financial Management Service, as the payment system for funds. For more information see [www.nifa.usda.gov/business/method\\_of\\_payment.html](http://www.nifa.usda.gov/business/method_of_payment.html).

### **B. Types of Applications**

In FY 2014, applications may be submitted to the AFRI Foundational Program as one of the following four types of requests.

#### **1. New Application**

A new application is an application that has not been previously submitted to AFRI. All new applications will be reviewed competitively using the evaluation criteria described in Part V – Application Review Requirements.

#### **2. Renewal application.**

This is a project application that requests additional funding for a project beyond the period that was approved in an original or amended award. Applications for renewed funding must contain the same information as required for new applications, and additionally must contain a Progress Report (see Project Narrative, Part IV). Renewal applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in area to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications.

#### **3. Resubmitted Application**

A resubmitted application is an application that has previously been submitted to AFRI, but was not funded. Project Directors (PDs) must respond to the previous panel review summary; see Response to Previous Review, Part IV, C. 3. c. Resubmitted applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in the area to which they are assigned, and will be reviewed according to the same evaluation criteria (Part V, B.) as new applications. Applications which appear to be resubmissions (regardless of the designation) are regarded as such by the program and the panel, and compete on the same basis with all other applications submitted to the program area priority at the same time.

Applicants who submitted applications to, but did not receive funding from previous AFRI Foundational Program RFAs may resubmit applications to the appropriate Program Area Priorities, if offered in FY 2014, within this RFA.

#### 4. Resubmitted renewal application

This is a project application that requests additional funding for a project beyond the period that was approved in the original award. In addition, this is an application that had previously been submitted for renewal to the AFRI but was not funded. Therefore, PDs must provide a Progress Report as required under the Project Narrative, Part IV, and must respond to the previous review panel summary as required under Response to Previous Review, Part IV. Resubmitted renewal applications must be received by the relevant due dates, will be evaluated in competition with other pending applications in areas to which they are assigned, and will be reviewed according to the same evaluation criteria as new applications.

All awards will be made as standard awards. A standard award is an award instrument by which the Department agrees to support a specified level of effort for a predetermined project period without the announced intention of providing additional support at a future date. Conference, Collaborative, Sabbatical, Equipment, and Seed Grants will also be made as standard awards.

### C. Project Types

Applications must propose one of the project types specified with the relevant Program Area description and select the appropriate grant type for the application within the constraints of the grant types solicited. The project and grant types solicited in the AFRI Foundational Program RFA are indicated in the table below and described in the Program Area Descriptions beginning in Part I, C.

Project and Grant Types Solicited by this RFA												
		Grant Type										
		Standard	CAP	Other (Collaborative <sup>4</sup> )	Conference	Food and Agricultural Science Enhancement (FASE) Grants <sup>3</sup>						
						New Investigator	Strengthening Grants					
							Sabbatical	Equipment	Seed	Standard	CAP	Conference
Project Type	Research	✓		✓	✓	✓	✓	✓	✓	✓		✓
	Education											
	Extension											
	Integrated <sup>5</sup>	✓			✓	✓	✓	✓	✓	✓		✓

<sup>3</sup> FASE Grants have special eligibility requirements. Refer to Part II, D. 4 for eligibility and additional information.

<sup>4</sup> Note that ONLY Animal Health and Production and Animal Products Program Area (see Part 1, C. 2) is soliciting Collaborative projects in this RFA.

<sup>5</sup> Note that ONLY the Agriculture Economics and Rural Communities Program Area (see Part I, C. 6) and the Critical Agricultural Research and Extension Program Area (see Part I, C. 7) are soliciting Integrated Projects in this RFA.

The work proposed for all project types must address a specific Program Area Priority described under Program Area Descriptions beginning in Part I, C., and the application must be submitted directly to that Program Area by the designated deadline date. Additionally, applicants must adhere to the Application and Submission Information beginning in Part IV when preparing applications unless otherwise instructed.

#### 1. Research Projects

Single-function Research Projects support fundamental or applied research conducted by individual investigators, co-investigators within the same discipline, or multidisciplinary teams.

**Fundamental research** means research that (i) increases knowledge or understanding of the fundamental aspects of phenomena and has the potential for broad application and (ii) has an effect on agriculture, food, nutrition, or the environment.

**Applied research** means research that includes expansion of the findings of fundamental research to uncover practical ways in which new knowledge can be advanced to benefit individuals and society.

**Multidisciplinary projects** are those in which investigators from two or more disciplines collaborate closely to address a common problem. These collaborations, where appropriate, may integrate the biological, physical, chemical, or social sciences.

## 2. Integrated Research, Education, and/or Extension Projects

NOTE: ONLY integrated projects are solicited under Agriculture, Economics and Rural Communities Program Area (Part I, C. 6) and Critical Agricultural Research and Extension Program Area (Part 1, C. 7) in this RFA.

An Integrated Project includes at least two of the three functions of the agricultural knowledge system (i.e., research, education, and extension) within a project, focused around a problem or issue. The functions addressed in the project should be interwoven throughout the life of the project and act to complement and reinforce one another. The functions should be interdependent and necessary for the success of the project and no more than two-thirds of the project's budget may be focused on a single component.

- a) The proposed **research** component of an integrated project should address knowledge gaps that are critical to the development of practices and programs to address the stated problem.
- b) The proposed **education** (teaching and teaching-related) component of an Integrated Project should develop human capital relevant to overall program goals for U.S. agriculture. An education or teaching activity is formal classroom instruction, laboratory instruction, and practicum experience in the food and agricultural sciences and other related matters such as faculty development, student recruitment and services, curriculum development, instructional materials and equipment, and innovative teaching methodologies.

Educational activities may include any of the following: conducting classroom and laboratory instruction and practicum experience; faculty research internships for curricula development; cutting-edge agricultural science and technology curriculum development; innovative teaching methodologies; instructional materials development; education delivery systems; student experiential learning (student led-research; internships; externships; clinics); student learning styles and student-centered instruction; student recruitment and retention efforts; career planning materials and counseling; pedagogy; faculty development programs; development of modules for on-the-job training; providing knowledge and skills for professionals creating policy or transferring to the agriculture workforce; faculty and student exchanges; and student study abroad and international research opportunities relevant to overall program goals for U.S. agriculture. Educational activities must show direct alignment with increasing technical competency in AFRI priority area(s) to ensure that U.S. agriculture remains globally competitive in the knowledge age.

Educational components must address one or two of the following key strategic actions:

- Train students for Associate, Baccalaureate, Master's or Doctoral degrees; and/or
- Prepare K-12 teachers and higher education faculty to understand and present food and agricultural sciences.

These projects should synthesize and incorporate a wide range of the latest relevant research results. Note that routine use of graduate students and postdoctoral personnel to conduct research is not considered education for the purposes of this program.

- c) The proposed **extension** component of an Integrated Project should conduct programs and activities that deliver science-based knowledge and informal educational programs to people, enabling them to make practical decisions. Program delivery may range from community-based to national audiences and use communication methods from face-to-face to electronic or combinations thereof. Extension Projects may also include related matters such as certification programs, in-service training, client recruitment and services, curriculum development, instructional materials and equipment, and innovative instructional methodologies appropriate to informal educational programs.

Extension activities may address, but are not limited to, the following key strategic actions:

- Support informal education to increase food, agricultural, and health literacy of youth and adults;
- Promote science-based agricultural literacy by increasing understanding and use of food and agricultural science data, information, and programs;
- Build science-based capability in people to engage audiences and enable informed decision making;
- Develop new applications of instructional tools and curriculum structures that increase technical competency and ensure global competitiveness;
- Offer non-formal learning programs that increase accessibility to new audiences at the rate at which new ideas and technologies are tested and/or developed at the community-scale; and
- Develop programs that increase public knowledge and citizen engagement leading to actions that protect or enhance the nation's food supply, agricultural productivity, environmental quality, community vitality, food security and/or public health and well-being.

These projects should synthesize and incorporate a wide range of the latest relevant research results. Please note that research-related activities such as publication of papers or speaking at scientific meetings are not considered extension for the purposes of this program.

Integrated Projects aim to resolve today's problems through the application of science-based knowledge and address needs identified by stakeholders. Integrated Projects clearly identify anticipated outcomes and have a plan for evaluating and documenting the success of the project. These projects should lead to measurable, documented changes in learning, actions, or conditions in an identified audience or stakeholder group.

Integrated Project applicants are encouraged to review [www.nifa.usda.gov/funding/integrated/integrated.html](http://www.nifa.usda.gov/funding/integrated/integrated.html) for additional information on integrated programs, including tips for writing Integrated Project applications and an example of an integrated application. Those interested in submitting Integrated Project applications are encouraged to contact the appropriate Program Area Priority Contact to discuss the anticipated project parameters and outcomes to ensure the application content appropriately meets the requirements of an Integrated Project.

## **D. Grant Types**

Applications must propose one of the project types specified within the Program Areas and select the appropriate grant type for the application within the constraints of the grant types solicited.

### **1. Standard Grants**

Standard Grants support targeted original scientific Research, Education, Extension, or Integrated Projects.

### **2. Other Grants (Collaborative)**

*ONLY Collaborative Research Grants are solicited under Animal Health, Production and Products Program area in this RFA.*

The Collaborative Project Grant is a type of Research, Education, Extension, or Integrated Project that allows AFRI programs to partner resources with other funding organizations to address high priority mission areas of mutual interest, without either organization transferring funds to the other. For AFRI programs soliciting Collaborative Project Grants, a single proposal is submitted to the program; it must contain all of the requisite sections for an AFRI application, in addition to information that may be outlined in the specific program description. The overall project must demonstrate an integrated, collaborative approach; the specific contributions and responsibilities of the AFRI and partner agency teams to the objectives must be set out clearly in the proposal's project narrative and reflected in the budget justifications. The advantages of the multi-organizational effort must be clearly described in the Project Narrative, as well as the specific managerial arrangements to assure strong coordination among teams. Work proposed to be supported by AFRI cannot duplicate what would be funded by the partners, and vice-versa. To be competitive for funding, a Collaborative Project Grant must clearly demonstrate a substantial and meaningful collaboration between the AFRI and non-AFRI funded teams. Work proposed to be funded by each agency (and therefore each agency's budget) must be integral to the success of at least one of the application objectives. If a Collaborative Project Grant is funded, AFRI makes an award to support objectives done by the AFRI Project Director and/or co-Project Directors. A separate award is made by the partner agency that supports objectives done by its team of Project Director and/or co-Project Directors. In FY2014, AFRI Collaborative Project (Research) Grants will only be solicited in two areas as a pilot activity within AFRI Foundational Animal Health and Production and Animal Products. While Collaborative Project Grants are solicited in a limited number of areas, all AFRI applications may continue to include subcontracts to other institutions for work also supported by AFRI.

**3. Conference Grants**

Conference Grants support scientific meetings that bring together scientists to identify research, education, and/or extension needs, update information, or advance an area of science. These activities are recognized as integral parts of scientific efforts. Support for a limited number of meetings covering subject matter encompassed by this solicitation will be considered for partial or, if modest, total support. Individual conference grants are not expected to exceed \$50,000 for one year and are not renewable. Indirect costs are not permitted on Conference Grant awards.

**4. Food and Agricultural Science Enhancement Grants**

Food and Agricultural Science Enhancement (FASE) Grants strengthen science capabilities in research, education, and/or extension programs. FASE Grants are designed to help institutions develop competitive projects, and to attract new scientists and educators into careers in high-priority areas of national need in agriculture, food, and environmental sciences. The FASE Grants provide support for Pre- and Postdoctoral Fellowships which are being solicited in a separate NIFA Fellowships Grant Program, New Investigators, and Strengthening Grants. Specific eligibility requirements for these grants are described below.

**a. Pre- and Postdoctoral Fellowship Grants**

Doctoral candidates and individuals who will soon receive or have recently received their doctoral degree are encouraged to submit an application for a Pre- or Postdoctoral Fellowship Grant, as appropriate, for research, education, extension, or integrated activities to the NIFA Fellowship Grants program. Program information, is available at [www.nifa.usda.gov/funding/afri/afri.html](http://www.nifa.usda.gov/funding/afri/afri.html).

**b. New Investigator Grants**

An individual who is beginning his/her career, does not have an extensive scientific publication record, and has less than five years postgraduate, career-track experience is encouraged to submit an application for a New Investigator Grant for research, education, and/or extension activities. The new investigator may not have received competitively awarded Federal research funds with the exception of pre- or postdoctoral grants or USDA NRI or AFRI Seed Grants. The application must contain documentation that lists all prior Federal support. The work proposed for New Investigator Grants must address a specific Program Area Priority described under Program Area Descriptions in Part I, C., and the application must be submitted directly to that Program Area by the designated deadline date.

### c. Strengthening Grants

These funds are expected to enhance institutional capacity with the goal of leading to future funding in the project area, as well as strengthen the competitiveness of the investigator's research, education, and/or extension activities. Strengthening Grants consist of Standard Grant types (both single-function and multi-function projects) as well as Seed Grants, Equipment Grants, and Sabbatical Grants. The work proposed for Strengthening Grants must address a specific Program Area Priority described under Program Area Descriptions in Part I, C., and the application must be submitted directly to that Program Area by the designated deadline date. All applications submitted for Strengthening Grants must fulfill the eligibility requirements described below.

#### 1) Strengthening Grant Eligibility

Strengthening grants are limited to 1) small and mid-sized or minority-serving degree-granting institutions that previously had limited institutional success for receiving Federal funds or 2) State Agricultural Experiment Stations or degree-granting institutions eligible for USDA Experimental Program to Stimulate Competitive Research (EPSCoR) funding and are eligible for reserved strengthening funds for Research, Education, Extension, and Integrated Project grants. See Figure 1 following Part VIII to assist with determining eligibility for Strengthening Grants.

#### 2) Strengthening Grant Eligibility Definitions

##### a) **EPSCoR States**

Every year, NIFA determines the states that are eligible for USDA EPSCoR funding. This list includes states having a funding level no higher than the 38<sup>th</sup> percentile of all States based on a 3-year rolling average of AFRI funding levels, excluding FASE Strengthening funds granted to EPSCoR States and small-mid-sized and minority-serving degree-granting institutions. Since the complete award data is not available for FY 2013, the eligibility determinations are based on the data obtained from grants made through the AFRI program from FY 2010 through FY 2012. For FY 2014, the following States meet the requirements for this category:

FY 2014 USDA EPSCoR States		
Alabama	Montana	South Carolina
Alaska	Nevada	South Dakota
Connecticut	New Hampshire	Utah
Idaho	New Mexico	Vermont
Kentucky	North Dakota	Wyoming
Maine	Oklahoma	
Mississippi	Rhode Island	

Other entities eligible for USDA EPSCoR funds in FY 2014 include the following United States commonwealths, territories, possessions and their successors, and the District of Columbia:

Other Entities eligible for USDA EPSCoR Funds	
American Samoa	Northern Mariana Islands
District of Columbia	Puerto Rico
Guam	Virgin Islands of the U.S.
Micronesia	

b) **Small and mid-sized institutions:** See Part VIII H. for a definition.

c) **Minority-serving institutions:** See Part VIII H. for a definition.

Applicants applying under this category should indicate the current percentage of applicable minority students enrolled at the institution as an "Other Attachment" (see Part IV, C. 3. g. 7)). A list of post-secondary minority-serving institutions can be found at [www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html](http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html).

d) **Limited institutional success:** See Part VIII H. for a definition. See Table 1 following Part VIII for an alphabetical list of the most successful institutions.

All institutions grouped under one main campus as listed in Table 1 following Part VIII, unless located in an EPSCoR state, are excluded from eligibility for all strengthening funds. The institution may petition for an exemption to this rule as described in Part III, B.

3) **Strengthening Grant Types**

An individual applicant may submit only one of the following types of strengthening applications (Sabbatical Grants, Equipment Grants, and Seed Grants) as PD this fiscal year. Investigators are encouraged to contact the Program Area Priority Contact for the appropriate program area priority, regarding suitability of project topics to verify that their submission is appropriate to the program area priority. For Equipment Grants, investigators are also encouraged to contact the appropriate Program Area Priority Contact regarding appropriateness of requested equipment for topics within program area priority requirements.

a) **Sabbatical Grants**

Sabbatical Grants are to provide an opportunity for faculty to enhance their research, education, and/or extension capabilities by funding sabbatical leaves. Collaborative arrangements are encouraged. Grants will be limited to one year of salary and funds for travel and supplies, where justified, and are not renewable.

NIFA also encourages and will support the concept of "mini-sabbaticals" for faculty and researchers desiring short-term training to learn new techniques that will improve their competitiveness. These short-term training opportunities generally follow all of the sabbatical requirements described beginning in Part IV, C., but for a shorter duration. These grants may be used to participate in short courses offered at various research institutions.

b) **Equipment Grants**

Equipment Grants are designed to strengthen the research, education, and/or extension capacity of institutions by funding the purchase of one major piece of equipment. These grants are not intended to replace requests for equipment in individual project applications. Rather, they are intended to help fund items of equipment that will upgrade infrastructure. Requests for computer equipment are allowed only if the equipment is to be used in an activity integral to the proposed project. Requests for computer equipment will not be permitted if the equipment will primarily serve as a word processor or perform administrative functions.

Each request shall be limited to one major piece of equipment within the cost range of \$10,000-\$250,000 and are not renewable. The amount of Federal funding requested shall not exceed 50 percent of the cost or \$50,000, whichever is less. Unless a waiver is granted by NIFA using the criteria listed in Part III, C., it is the responsibility of the PD to secure required matching funds with non-Federal funds (see Part III, C for more information). No installation, maintenance, warranty, or insurance expenses may be paid from these grants, nor may these costs be part of the matching funds. Indirect costs are not permitted on Equipment Grant awards.

c) **Seed Grants**

Seed Grants are to provide funds to enable investigators to collect preliminary data or perform other preliminary activities in preparation for applying for future grants from AFRI. The grants are not intended to fund stand-alone projects, but rather projects that will lead to further work applicable to one of the AFRI Program Areas. Seed Grant applications proposing an Integrated Project only need to include one of the three functions (research, education, extension) and justify how this Seed Grant will allow the applicant to become competitive for future Integrated Project funding.

Seed Grants are limited to a total of \$150,000 (including indirect costs) for two year duration and are not renewable.

**d) Strengthening Standard Grants**

Standard Grant applications that meet the eligibility requirements for Strengthening Grants are eligible for reserved strengthening funds as a Strengthening Standard Grant. The eligibility requirements only apply to the lead PD and are not required for co-PD(s) associated with the project.

**e) Strengthening Conference Grants**

Conference Grant applications that meet the eligibility requirements for Strengthening Grants are eligible for reserved strengthening funds as a Strengthening Conference Grant. The eligibility requirements only apply to the lead PD and are not required for co-PD(s) associated with the project.

## **E. Responsible and Ethical Conduct of Research**

The responsible and ethical conduct of research (RCR) is critical for excellence, as well as public trust, in science and engineering. Consequently, we consider education in RCR essential to the preparation of future scientists. In accordance with sections 2, 3, and 8 of 7 CFR Part 3022, institutions that conduct USDA-funded extramural research must foster an atmosphere conducive to research integrity, bear primary responsibility for prevention and detection of research misconduct, and maintain and effectively communicate and train their staff regarding policies and procedures. In the event an application to NIFA results in an award, the Authorized Representative (AR) assures, through acceptance of the award that the institution will comply with the above requirements. Per award terms and conditions, grant recipients shall, upon request, make available to NIFA the policies, procedures, and to support the conduct of the training.

Note that the training referred to herein shall be either on-campus or off-campus training. The general content of the ethics training will, at a minimum, emphasize three key areas of research ethics: authorship and plagiarism, data and research integration, and reporting misconduct. Each institution will be responsible for developing its own training system, as schools will need flexibility to develop training tailored to their specific student needs. Grantees should consider the Collaborative Institutional Training Initiative (CITI) program for RCR ([www.citiprogram.org/rcrpage.asp](http://www.citiprogram.org/rcrpage.asp)). Typically this RCR education addresses the topics of: Data Acquisition and Management - collection, accuracy, security, access; Authorship and Publication; Peer Review; Mentor/Trainee Responsibilities; Collaboration; Conflict of Interest; Research Misconduct; Human Subject Research; and Use of Animals in Research.

## PART III - ELIGIBILITY INFORMATION

### A. Eligible Applicants

Eligibility is linked to the **project type** requested in Program Area Descriptions beginning in Part I, C. All project types are described beginning in Part II, C. Eligible institutions for Research Projects, Conference Projects and Collaborative Projects are described in paragraph #1 below. Eligible institutions for multi-functional Integrated Projects are described in paragraph #2 below.

Applicants must respond to the Program Area Priorities and deadlines found in the FY 2014 RFA. Grant recipients may subcontract to organizations not eligible to apply provided such organizations are necessary for the conduct of the project. An applicant's failure to meet an eligibility criterion by the time of an application deadline may result in the application being excluded from consideration or, even though an application may be reviewed, will preclude NIFA from making an award.

#### 1. Research, Conference or Collaborative Projects

Eligible applicants for Research, Extension, Conference or Collaborative Projects include: 1) State Agricultural Experiment Stations; 2) colleges and universities (including junior colleges offering associate degrees or higher); 3) university research foundations; 4) other research institutions and organizations; 5) Federal agencies; 6) national laboratories; 7) private organizations or corporations; 8) individuals who are U.S. citizens, nationals, or permanent residents; and 9) any group consisting of 2 or more entities identified in 1) through 8). Eligible institutions do not include foreign and international organizations.

#### 2. Integrated Projects

*Note that ONLY integrated projects are solicited under Agriculture, Economics and Rural Communities Program area (Part I, C. 6) and Critical Agricultural Research and Extension Program Area (Part 1C. 7) in this RFA.*

Eligible applicants for Integrated Projects include:

a) Colleges and universities - the terms "college" and "university" mean an educational institution in any state which 1) admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such a certificate; 2) is legally authorized within such state to provide a program of education beyond secondary education; 3) provides an educational program for which a bachelor's degree or any other higher degree is awarded; 4) is a public or other nonprofit institution; and 5) is accredited by a nationally recognized accrediting agency or association. A research foundation maintained by a college or university is eligible to receive an award under this program.

b) 1994 Land-Grant Institutions - means one of those institutions as defined in section 532 of the Equity in Educational Land-Grant Status Act of 1994, as amended (7 U.S.C. 301 note). These institutions are commonly referred to as Tribal Colleges or Universities.

c) Hispanic-serving Agricultural Colleges and Universities (HSACUs) - HSACUs are colleges and universities that qualify as Hispanic-serving Institutions (HSIs) and offer associate, bachelors, or other accredited degree programs in agriculture-related fields. HSACUs do not include 1862 land-grant institutions.

Pursuant to section 406 of the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA) (7 U.S.C. 7626), which authorized the Integrated Research, Education, and Extension Competitive Grant Program, all four-year HSIs are eligible to apply for integrated projects as identified in the FY 2014 AFRI RFA. Two-year HSIs may also be eligible to apply but only if the institution has been certified as a HSACU for the fiscal year in which funding is being provided.

By January 2014, a list of the institutions certified and therefore eligible to apply as HSACUs for grants under FY 2014 RFAs, including this RFA, will be made available at [www.nifa.usda.gov/nea/education/in\\_focus/hispanic\\_if\\_hispanic\\_HSACU.html](http://www.nifa.usda.gov/nea/education/in_focus/hispanic_if_hispanic_HSACU.html). Institutions appearing on this list are granted HSACU certification by the Secretary for the period starting October 1, 2013, and ending September 30, 2014. Certifications are valid for FY 2014 only. Additional questions on HSACU eligibility can be addressed to Mr. Matthew Lockhart, Senior Policy Specialist, by email at [mlockhart@nifa.usda.gov](mailto:mlockhart@nifa.usda.gov) or phone at (202) 559-5088.

### 3. Food and Agricultural Science Enhancement Grants

The Food and Agricultural Science Enhancement (FASE) Grants have additional eligibility requirements. See Part II, D. 4 for details.

## B. Request for Determination

### Minority-Serving Institution

If an applicant's institution can be considered a minority-serving institution and wishes to be considered for a Strengthening Grant (as described in Part II, D. 4. c), but does not serve one or more of the minority groups specified in the Definitions section of this RFA (see Part VIII, H), the applicant must submit to NIFA, documentation supporting the request. This documentation must be submitted as part of the requestor's Letter of Intent (if required) and the application package, and must be received by NIFA by the applicable program deadline. The Secretary of Agriculture or designated individual will determine whether the group or groups identified are eligible under this program.

The following information must be provided in the order specified below:

1. A description of each minority group that is being submitted for determination;
2. Data or studies supporting this group's designation as a minority group; and
3. Data indicating that enrollment of the minority group(s) exceeds 50 percent of the total enrollment at the academic institution, including graduate and undergraduate and full- and part-time students.

### Multi-Campus Institution

All institutions grouped under one main campus as listed in Table 1 following Part VIII, unless located in an EPSCoR state (listed in Part II, D. 4. c. 2 a.), are excluded from eligibility for all strengthening funds. However, if any campus within a multi-campus listing can provide information demonstrating that it is administratively independent or has an independent accreditation, then the institution may petition for an exemption to this rule and request eligibility for strengthening funds. The Letter of Intent (if required) and the application must include a letter indicating how the institution is independent of the main campus, either through accreditation or administration. In addition, the letter should stipulate that the institution is eligible as a small and mid-sized or minority-serving institution due to enrollment and total federal funds received for science and engineering research and development. The letter must be signed by the Authorized Representative (AR) and included with the Letter of Intent (if required) and the completed application.

## C. Cost Sharing or Matching

If a funded **applied Research or Integrated Project** is commodity-specific and not of national scope, the grant recipient is required to match the USDA funds awarded on a dollar-for-dollar basis from non-Federal sources with cash and/or in-kind contributions.

**For Equipment Grants:** The amount of Federal funds provided may not exceed 50 percent of the cost of the equipment acquired using funds from the grant, or \$50,000, whichever is less. Grantees are required to match 100 percent of Federal funds awarded from non-Federal sources. The Secretary may waive all or part of the matching requirement if all three of the following criteria are met: 1) applicants must be a college, university, or research foundation maintained by a college or university that ranks in the lowest one third of such colleges, universities, and research foundations on the basis of Federal research funds

received (see Table 2 following Part VIII for eligibility); 2) if the equipment to be acquired using funds from the grant costs not more than \$25,000; and 3) has multiple uses within a single research project or is usable in more than one research project. If the institution believes it is eligible for the waiver for matching funds, the budget justification must include a letter signed by the institution's AR stating this information.

## PART IV – APPLICATION AND SUBMISSION INFORMATION

### A. Letter of Intent Instructions

All Program Areas within the AFRI Foundational Program Area require a Letter of Intent and is a prerequisite for submission of an application. Refer to the Program Area Descriptions beginning in Part I, C for Letter of Intent deadlines for a specific Program Area.

***NOTE:** You must contact the Program Area contact before submitting a Letter of Intent to the Exploratory Research Program Area Priority.*

1. The Letter of Intent must adhere to the following guidelines:
  - a. Font size must be at least 12 point
  - b. Margins must be at least one inch in all directions
  - c. Line spacing must not exceed six lines of text per vertical inch
  - d. The Letter of Intent is limited to **two pages** for all project and grant types
  - e. On Page 1, provide **only** the following information:
    - i. the name, professional title, department, institution and e-mail address of the lead project director (PD) and name, professional title, department, and institution of all collaborating investigators
    - ii. the Program Area and the Priority area within that Program Area most closely addressed in the application
  - f. On Page 2, include:
    - i. a descriptive title
    - ii. rationale
    - iii. overall hypothesis or goal
    - iv. specific objectives
    - v. approach
    - vi. potential impact and expected outcomes
2. NIFA will only accept Letters of Intent in the portable document format (PDF). Attach the PDF Letter of Intent to an email addressed to the appropriate Program Area email address for Submission of Letter of Intent. In the email subject line, write: Letter of Intent [Program Area Priority Code] \_ [PD's Last Name].
3. A letter is required for **all** grant types except Conference Grant applications. See Part II, D for a detailed description of grant types.
4. Submission of more than one Letter of Intent to a program (i.e., program area priority) is discouraged.
5. An acknowledgment receipt will be sent by replying to the sender within five business days.
6. Letters of Intent will be reviewed by scientific program staff in order to plan for appropriate expertise for the peer review panel and ensure that the proposed project fits appropriately within the Program Area Priorities.
7. Within three weeks after the Letter of Intent deadline, the PD will receive a response from the Program Area Priority Contact.
8. Applications submitted without a prior Letter of Intent submission will not be reviewed.
9. Applicants must notify the appropriate Program Area Priority Contact of any changes to project key personnel, title, or objectives from the time of submission of the Letter of Intent to the submission of a full application.

## B. Electronic Application Package

Only electronic applications may be submitted via Grants.gov to NIFA in response to this RFA. We urge to submit early to the Grants.gov system. For an overview of the Grants.gov application process see [www.grants.gov/web/grants/applicants/grant-application-process.html](http://www.grants.gov/web/grants/applicants/grant-application-process.html).

### New Users of Grants.gov

Prior to preparing an application, we recommend that the PD/PI first contact an Authorized Representative (AR, also referred to as Authorized Organizational Representative or AOR) to determine if the organization is prepared to submit electronic applications through Grant.gov. If not (e.g., the institution/organization is new to the electronic grant application process through Grants.gov), then the one-time registration process must be completed PRIOR to submitting an application. It can take as long as 2 weeks to complete the registration process so it is critical to begin as soon as possible. In such situations, the AR should go to **“Register” in the top right corner of the Grants.gov web page (or go to [www.grants.gov/web/grants/register.html](http://www.grants.gov/web/grants/register.html)) for information on registering the institution/organization with Grants.gov.** Item 2. below mentions the “NIFA Grants.gov Application Guide.” Part II.1. of the NIFA Grants.gov Application Guide contains additional explanatory language regarding the registration process.

### Steps to Obtain Application Package Materials

To receive application materials:

1. You must download and install a version of Adobe Reader compatible with Grants.gov to access, complete, and submit applications. For basic system requirements and download instructions, see [www.grants.gov/web/grants/support/technical-support/software/adobe-reader-compatibility.html](http://www.grants.gov/web/grants/support/technical-support/software/adobe-reader-compatibility.html). Grants.gov has a test package that will help you determine whether your current version of Adobe Reader is compatible.
2. To obtain the application package from Grants.gov, go to [www.grants.gov](http://www.grants.gov), click on “Applicants” in the navigation bar at the top of the page and then click on the “Apply for Grant Opportunities” link under the “Apply for Grant” heading. Under Step 1 click on “Download a Grant Application Package,” and enter the funding opportunity number **USDA-NIFA-AFRI-004412** in the appropriate box and click “Download Package.” From the search results, click “Download” to access the application package.

Contained within the application package is the “NIFA Grants.gov Application Guide.” This guide contains an introduction and general Grants.gov instructions, information about how to use a Grant Application Package in Grants.gov, and instructions on how to complete the application forms.

**If you require assistance to access the application package** (e.g., downloading or navigating Adobe forms) **or submitting the application**, refer to resources available on the Grants.gov website ([www.grants.gov/web/grants/applicants/applicant-resources.html](http://www.grants.gov/web/grants/applicants/applicant-resources.html)). Grants.gov assistance is also available at:

Grants.gov customer support

800-518-4726 Toll-Free or 606-545-5035

Business Hours: 24 hours a day, 7 days a week. Closed on [federal holidays](#).

Email: [support@grants.gov](mailto:support@grants.gov)

Grants.gov iPortal: Top 10 requested help topics (FAQs), Searchable knowledge base, self-service ticketing and ticket status, and live web chat (available 7 am - 9 p.m. ET). Get help now!

Have the following information available when contacting Grants.gov:

- Funding Opportunity Number (FON)
- Name of Agency You Are Applying To
- Specific Area of Concern

See [http://grants.gov/applicants/app\\_help\\_reso.jsp](http://grants.gov/applicants/app_help_reso.jsp) or [www.nifa.usda.gov/funding/electronic.html](http://www.nifa.usda.gov/funding/electronic.html) for additional resources for applying electronically.

### C. Content and Form of Application Submission

You should prepare electronic applications following Parts V and VI of the NIFA Grants.gov Application Guide. This guide is part of the corresponding application package (see Section A. of this Part). The following is **additional information** needed to prepare an application in response to this RFA. **If there is discrepancy between the two documents, the information contained in this RFA is overriding.**

All application information provided herein is general for all Project and Grant Types. However, some types require different information. These differences are noted by a ☼ symbol. Proper preparation of an application will assist reviewers in evaluating the merits of each application in a systematic, consistent fashion.

#### Attachment Requirements

**Note the attachment requirements (e.g., PDF) in Part III section 3. of the guide. ANY PROPOSALS THAT ARE NON-COMPLIANT WITH THE REQUIREMENTS (e.g., content format, PDF file format, file name restrictions, and no password protected files) WILL BE AT RISK OF BEING EXCLUDED FROM NIFA REVIEW. Partial applications will be excluded from NIFA review. We will accept subsequent submissions of an application until close of business on the closing date in the RFA (see Part V, 2.1 of the NIFA Grants.gov Application Guide for further information).**

In addition to the formatting requirements noted in Part III section 3. of the Guide, submitted PDF documents must adhere to the following formatting guidelines:

- Line spacing must not exceed six lines of text per vertical inch
- Follow the page limitations for each attachment
- Title each attachment in the document header and save each file with the referenced name

**Grants.gov provides online tools to assist if you do not own PDF-generating software. You will find PDF conversion software at <http://test.grants.gov/web/grants/support/technical-support/software/pdf-conversion-software.html>.**

**For any questions related to the preparation of an application,** review the NIFA Grants.gov Application Guide and the applicable RFA. If assistance is still needed for preparing application forms content, contact:

- Email: [electronic@nifa.usda.gov](mailto:electronic@nifa.usda.gov)
- Phone: 202-401-5048
- Business hours: Monday through Friday, 7:00 a.m. – 5:00 p.m. ET, excluding Federal holidays.

#### 1. SF 424 R&R Cover Sheet

Information related to the questions on this form is dealt with in detail in Part V, 2. of the NIFA Grants.gov Application Guide.

**a. Field 12. Proposed Project** – For the start date of the project, select a date at least six months after the submission deadline date for the program. Choose the end date to correspond to the correct duration of the project.

**b. Field 20. Pre-application** – Do not fill out this portion of the form.

2. **SF 424 R&R Project/Performance Site Location(s)**

Information related to the questions on this form is dealt with in detail in Part V, 3. of the NIFA Grants.gov Application Guide.

3. **R&R Other Project Information Form**

Information related to the questions on this form is dealt with in detail in Part V, 4. of the NIFA Grants.gov Application Guide.

**a. Fields 1 and 2. Are Human Subjects Involved? or Are Vertebrate Animals Used?**

☼ *For Sabbatical Grant Applications* – Applicants whose research requires use of human subjects or vertebrate animals must have their project reviewed by the appropriate committee(s) at the institution where the research will be conducted.

**b. Field 7. Project Summary/Abstract – PDF Attachment.** The following instructions are in addition to those included in section 4.7 of Part V of the NIFA Grants.gov Application Guide. Title the attachment as 'Project Summary' in the document header and save file as 'ProjectSummary'.

The Project Summary must list the names and institutions of the PD and co-PDs and **indicate which specific FY 2014 Program Area Priority the proposed project addresses**. Program Area Priorities are stated within each Program Area Description (see Part I, C). Applications that do not address at least one Program Area Priority will not be reviewed.

☼ *For Conference Grant Applications* – State the objectives of the conference, symposium, or workshop, as well as the proposed location and probable inclusive date(s) of the conference. Please state in the summary the specific Program Area Priority to which the project applies.

☼ *For Sabbatical Grant Applications* – Indicate overall project goals and supporting objectives.

☼ *For Equipment Grant Applications* – Indicate equipment sought and overall project goals for its use.

☼ *For Exploratory Research Applications* – Indicate the project goal is appropriate to the Program Area Priority with supporting objectives.

**c. Field 8. Project Narrative – PDF Attachment.** Title the attachment as 'Project Narrative' in the document header and save file as 'ProjectNarrative'.

**Page Limits**

For Standard Research, Standard Integrated, Conference, Collaborative, New Investigator, Strengthening Standard Grant and Strengthening Conference applications, the Project Narrative section may **not exceed a total of 18 pages** with 12-point font and line spacing not exceeding six lines of text per vertical inch, including all figures and tables.

For Sabbatical, Equipment, and Seed Grant applications, the Project Narrative section may **not exceed a total of 7 pages** with 12-point font and line spacing not exceeding six lines of text per vertical inch, including all figures and tables.

For Exploratory Research applications, the Project Narrative section may **not exceed 5 pages** with 12-point font and line spacing not exceeding six lines of text per vertical inch, including all figures and tables.

**To ensure fair and equitable competition, applications exceeding the applicable page limitation will be returned without review.**

Each Project Narrative is expected to be complete; however, preprints (see section g, 6 below) related to the Project Narrative are allowed, if they are directly germane to the proposed project. Information may not be appended to an application to circumvent page limitations prescribed for the Project Narrative. **Extraneous materials will not be used during the peer review process.**

**Project Narrative must include all of the following:**

- 1) Response to Previous Review (if applicable)  
This requirement only applies to Resubmitted Applications and Resubmitted Renewal Applications as described in Part II, B. The Project Narrative attachment should include two components: 1) a one-page response to the previous review panel summary titled “Response to Previous Review” included as the first page of the Project Narrative attachment and 2) the 7- or 18-page Project Narrative, as required (see Part IV, C. 3. c above).
- 2) Introduction  
Include a clear statement of the long-term goal(s) and supporting objectives of the proposed project. Summarize the body of knowledge or past activities that substantiate the need for the proposed project. Describe ongoing or recently completed activities significant to the proposed project including the work of key project personnel. Include preliminary data/information pertinent to the proposed project. All works cited should be referenced (see Bibliography & References Cited in section d. below).
- 3) Rationale and Significance
  - a) Concisely present the rationale behind the proposed project;
  - b) Describe the specific relationship of the project’s objectives to one of the Program Area Priorities. Applications that do not address at least one Program Area Priority will not be reviewed; and
  - c) The potential long-range improvement in and sustainability of U.S. agriculture and food systems should be shown clearly. These purposes are described under Purpose and Priorities in Part I, B. Any novel ideas or contributions that the proposed project offers should also be discussed in this section.
- 4) Approach  
The activities proposed or problems being addressed must be clearly stated and the approaches applied are to be clearly described. Specifically, this section must include:
  - a) A description of the activities proposed and the sequence in which the activities are to be performed;
  - b) Methods to be used in carrying out the proposed project, including the feasibility of the methods;
  - c) Expected outcomes;
  - d) Means by which results will be analyzed, assessed, or interpreted;
  - e) How results or products will be used;
  - f) Pitfalls that may be encountered;
  - g) Limitations to proposed procedures;
  - h) A full explanation of any materials, procedures, situations, or activities related to the project that may be hazardous to personnel, along with an outline or precautions to be exercised to avoid or mitigate the effects of such hazards; and
  - i) A timeline for attainment of objectives and for production of deliverables that includes annual milestones with specific, measurable outcomes.

☀ *For Integrated Project Applications –*

- Integrated Project applications must include at least two of the three functions of the agricultural knowledge system (i.e., research, education, and extension). Each function should be represented by one or more objectives within the application.

- Projects must budget sufficient resources to carry out the proposed set of research, education, and/or extension activities that will lead to the desired outcomes. No more than two-thirds of a project's budget may be focused on a single function.
- Integrated Projects must include individuals on the project team with significant expertise in each component of the project (research, education, and/or extension).
- A plan for evaluating progress toward achieving project objectives must be included. The plan must include milestones, which signify the completion of a major deliverable, event, or accomplishment and serve to verify that the project is on schedule and on track for successful conclusion. The plan should also include descriptions of indicators that you will measure to evaluate whether the research, education, and/or extension activities are successful in achieving project goals and in contributing to achievement of the stated program goals and outcomes.
- In addition to the Project Narrative requirements above, the proposed Integrated Project should clearly articulate:
  - Stakeholder involvement in project development, implementation, and evaluation, where appropriate;
  - Objectives for each function included in the project (note that extension and education activities are expected to differ and to be described in separate project objectives; see enumerated descriptions in Part II, C.); and
  - A dissemination plan describing the methods that will be used to communicate findings and project accomplishments.
- AFRI encourages Integrated Projects that develop content suitable for delivery through eXtension. This content is for “end users” as opposed to staff development and must follow the eXtension Guiding Principles and guidelines for including eXtension in a proposal presented at [http://about.extension.org/wiki/NIFA\\_RFA\\_Information](http://about.extension.org/wiki/NIFA_RFA_Information). Funds may be used to 1) enhance an existing Community of Practice or 2) to establish a new Community of Practice, as appropriate.
- AFRI encourages Integrated Projects that are suitable for 4-H audiences and stakeholder groups while meeting identified program priorities. The 4-H Youth Development is the programmatic outreach of the Land Grant Universities and Institutions to our youngest citizens in their communities and provides opportunities for youth to develop skills, practical knowledge, and wisdom with an emphasis on practical application of knowledge or “learning by doing.” By engaging 4-H in AFRI projects, applicants engage young people as citizen scientists; increase their awareness of the role of agriculture; and prepare young people for higher education and the 21st century work environment. Opportunities for engaging 4-H in AFRI proposals should align with the 4-H Mission Mandates of Science, Engineering and Technology; Healthy Living; and Citizenship. See guiding principles at [www.national4-hheadquarters.gov](http://www.national4-hheadquarters.gov) or contact your university Cooperative Extension headquarters and/or State 4-H Program Office.

☼ *For Conference Grant Applications* – The requirements noted below are in lieu of those in the Approach section mentioned above:

- A justification for the meeting;
- Recent meetings on the same subject with dates and locations;
- Names and organizational affiliations of the chair and other members of the organizing committee;
- A proposed program (or agenda) for the conference, including a listing of scheduled participants and their institutional affiliations; and
- The method of announcement or invitation that will be used.

☼ *For Exploratory Research Grant Applications*– In addition to the Project Narrative requirements above, include the following in the rationale and approach section:

- A clearly articulated and compelling justification for the topical area;
- Plans for seeking additional funding.
- Must include a clear description as to why it is appropriate to be considered as an Exploratory Research application and not appropriate for submission as a standard competitive grant proposal to the various Agriculture and Food Research Initiative (AFRI) Program Area Priorities.

**NOTE: Applicants are encouraged contact the Program Area Contact to seek input on whether the proposed project is appropriate to apply for Exploratory Research Program Area Priority.**

☀ *For Sabbatical Grant Applications* – The Project Narrative for these applications also should include:

- A general description of the research, education, and/or extension interests and goals of the applicant in order to provide perspective for the application;
- A description of the project to be pursued while on the sabbatical leave;
- A statement of how the sabbatical leave will enhance the capabilities of the applicant; and
- A statement of future research goals and objectives once the sabbatical is complete and how the sabbatical will enable the applicant to pursue these goals.

☀ *For Equipment Grant Applications* – The Project Narrative for these applications also should include a general description of the project(s) for which the equipment will be used, how the equipment will fit into or enhance the research, education, and/or extension program, and how the equipment will allow the applicant to become competitive for future funding or move into new research areas. Also include a description of other similar or complementary equipment available to the PD at the institution and why the requested equipment is necessary.

☀ *For Seed Grant Applications* – Include all of the components detailed in the Project Narrative section above and present enough detail to allow adequate evaluation. In order to be competitive, long-term goals and a statement describing how this Seed Grant will allow the applicant to become competitive for future funding must be included.

**d. Field 9. Bibliography & References Cited – PDF Attachment. No Page Limit.** Title the attachment as 'Bibliography & References Cited' in the document header and save file as 'BibliographyReferencesCited'.

All work cited in the text should be referenced in this section of the application. All references must be complete; include titles and all co-authors; conform to an acceptable journal format; and be listed in alphabetical order using the last name of the first author or listed by number in the order of citation.

**e. Field 10. Facilities & Other Resources – PDF Attachment. No Page Limit.** Title the attachment as 'Facilities & Other Resources' in the document header and save file as 'FacilitiesOtherResources'.

**f. Field 11. Equipment – PDF Attachment. No Page Limit.** Title the attachment as 'Equipment' in the document header and save file as 'Equipment'.

Describe available equipment. Items of nonexpendable equipment necessary to conduct and successfully complete the proposed project should be listed in Field C. of the R&R Budget and described in the Budget Justification (see section 6 below).

**g. Field 12. Other Attachments**

The following instructions are in addition to those noted in Part V 4.12 of the NIFA Grants.gov Application Guide.

- 1) **Project Type – PDF Attachment. 1-Page Limit.** Title the attachment as 'Project Type' and save file as 'ProjectType'.

Identify the type of project and the type of grant you are submitting by completing the Project Type template located at: [www.nifa.usda.gov/funding/templates/project\\_type.doc](http://www.nifa.usda.gov/funding/templates/project_type.doc). Before doing so, however, please refer to Part I, C of this RFA to determine which project types are

requested under each Program Area Description. Also please see Part II of this RFA for a full description of each project and grant type.

- 2) *Key Personnel Roles* – **PDF Attachment. 2-Page Limit.** Title the attachment as 'Key Personnel' and save file as 'KeyPersonnel'.

☀ *For Integrated Grant Applications* – state for key personnel an estimate of the percent of time devoted to research, education, and/or extension activities.

- 3) *Logic Model* – **PDF Attachment. Required for all Integrated Project applications. Allowable for Other Research Projects. 2-Page Limit.** Title the attachment as 'Logic Model' and save file as 'LogicModel'.

Include the elements of a logic model detailing the activities, outputs, and outcomes of the proposed project. The logic model planning process is a tool that should be used to develop your project before writing your application. This information may be provided as a narrative or formatted into a logic model chart. More information and resources related to the logic model planning process are provided at

[www.nifa.usda.gov/funding/integrated/integrated\\_logic\\_model.html](http://www.nifa.usda.gov/funding/integrated/integrated_logic_model.html).

- 4) *Management Plan* – **PDF Attachment. Required for Integrated Project Grants Only. Allowable for Research Projects. 3-Page Limit.** Title the attachment as 'Management Plan' and save file as 'ManagementPlan'.

The plan is to be clearly articulated and include an organizational chart, administrative timeline, and a description of how the project will be governed, as well as a strategy to enhance coordination, collaboration, communication, and data sharing and reporting among members of the project team and stakeholder groups. The plan must also address how the project will be sustained beyond termination of an award.

The management plan must also include an advisory group of principal stakeholders, partners, and professionals to assess and evaluate the quality, expected measurable outcomes, and potential impacts for the proposed research, education, and/or extension. Please include rationale for their role, and how they will function effectively to support the goals and objectives of the project. The plan must demonstrate how partners and stakeholders contribute to project assessment on an annual basis.

- 5) *Documentation of Collaboration* – **PDF Attachment. No Page Limit.** Title the attachment as 'Documentation of Collaboration' in the document header and save file as 'Collaboration'.

Evidence, e.g., letter(s) of support, should be provided that the collaborators involved have agreed to render services. The applicant also will be required to provide additional information on consultants and collaborators in the budget portion of the application.

☀ *For Sabbatical Grant Applications* – Provide documentation that arrangements have been made with an established investigator(s) to serve as host, including:

- A letter from the home institution detailing the particular arrangements at the home institution with respect to salary and date and duration of sabbatical;
- A letter from the scientific host(s) indicating willingness to serve in this capacity and a description of the host's contribution to the proposed activities both scientifically and with regard to use of facilities and equipment; and
- A statement signed by the Department Head or equivalent official at the host institution indicating a commitment to provide research space and facilities for the period of the applicant's presence.

☼ *For Equipment Grant Applications* – The application must contain a letter(s) from the organization(s) committed to providing the non-Federal matching funds. Provide evidence of institutional commitment for operation and maintenance of requested equipment. Arrangements for sharing equipment among faculty are encouraged. However, it must be evident that the PD is a principal user of the requested equipment.

- 6) *Preprints – PDF Attachment. Limited to 2 preprints.* Title the attachment as 'Preprints' in the document header and save file as 'Preprints'.

Preprints related to the Project Narrative are allowed if they are directly germane to the proposed project. Information may not be appended to an application to circumvent page limitations prescribed for the Project Narrative. **Extraneous materials will not be used during the peer review process.** Only manuscripts in press for a peer-reviewed journal will be accepted and must be accompanied by letters of acceptance from the publishing journals). Preprints attached in support of the application should be **single-spaced**. Each preprint must be identified with the name of the submitting organization, the name(s) of the PD(s), and the title of the application.

- 7) *Minority-Serving Institution Documentation – PDF Attachment.* Title the attachment as 'Minorityinfo' in the document header and save file as 'Minorityinfo'.

- (a) Letter identifying percentage of applicable minority students.
- (b) Request for Determination – see Part III, B.

4. **R&R Senior/Key Person Profile (Expanded)**

This section of the Guide includes information about the people who require a Senior/Key Person Profile, and details about the Biographical Sketch and the Current and Pending Support, including a link to a suggested template for the Current and Pending Support.

Information related to the questions on this form is dealt with in detail in Part V, 5. of the NIFA Grants.gov Application Guide. Additional instructions are described below.

A Senior/Key Person Profile should be completed for the PD and each co-PD, senior associate, and other professional personnel, including collaborators playing an active role in the project. Collaborators only providing services or materials should not be listed in the R&R Senior/Key Person Profile. Evidence (letters of support) for this type of collaboration should be provided in the Documentation of Collaboration (see Part IV, C. 3. g. 5).

**a. Project Role Field** – Complete appropriately.

☼ *For Sabbatical Grant Applications* – Select "PD/PI" for the Sabbatical Grant applicant. Select "Other" for the corresponding scientific host(s) and any other personnel whose qualification merit consideration in the evaluation of the application.

☼ *For Equipment Grant Applications* – Select "PD/PI" for the Equipment Grant applicant. Select "Faculty" for the other major users of the equipment.

**b. Other Project Role Category Field** – Complete appropriately, if applicable.

**c. Attach Biographical Sketch Field – PDF Attachment. 2-Page Limit** (excluding publications listings). Title the attachment as 'Biographical Sketch' in the document header and save file as 'BiographicalSketch'.

A biographical sketch (vitae) of the PD and each co-PD, senior associate, and other professional personnel should be included.

The Conflict of Interest list should not be included in the biographical sketch, but it must be provided as a separate document (see Part IV, C. 7. b for more information).

☼ *For Sabbatical Grant Applications* – A Biographical Sketch must be submitted for the Sabbatical Grant applicant, the scientific host(s), and any other personnel whose qualifications merit consideration in the evaluation of the application.

☼ *For Equipment Grant Applications* – A Biographical Sketch for both the Equipment Grant applicant and other major users of the equipment must be submitted.

**d. Attach Current and Pending Support Field – PDF Attachment. No Page Limit.** Title the attachment as 'Current and Pending Support' in the document header and save file as 'CurrentPendingSupport'.

A recommended template for the Current and Pending Support can be found at:  
[www.nifa.usda.gov/funding/templates/current\\_pending.doc](http://www.nifa.usda.gov/funding/templates/current_pending.doc).

Current and Pending Support information is only required for personnel with PD or co-PD indicated as their Project Role on the R&R Senior/Key Person Profile. All applications must contain a list of all Current and Pending Support detailing public or private support (including in-house support) to which personnel identified in the application have committed portions of their time, whether or not salary support for person(s) involved is included in the budget. Please note that the project being proposed should be included in the pending section of the form. Total project listed for each PD should be indicated as percent effort and not exceed 100% for concurrent (Current and Pending) projects.

The AFRI program will not fund an application that duplicates or overlaps substantially with other NIFA funding (including non-competitive funds such as Special Grants or Hatch formula funds) or other Federal funding. As an addendum to the Current and Pending Support, provide a brief summary for any completed, current, or pending projects that appear similar to the current application, especially previous National Research Initiative (NRI) or AFRI awards.

☼ *For Sabbatical Grant Applications* – Current and Pending Support for both the Sabbatical Grant applicant and the scientific host(s) (as documentation of on-going work in the host's laboratory) must be completed.

☼ *For Equipment Grant Applications* – Current and Pending Support for both the Equipment Grant applicant and other major users of the equipment must be completed.

**5. R&R Personal Data**

As noted in Part V, 6. of the NIFA Grants.gov Application Guide, the submission of this information is voluntary and is not a precondition of award.

**6. R&R Budget**

Information related to the questions on this form is dealt with in detail in Part V, 7. of the NIFA Grants.gov Application Guide.

**a. Budget Periods.** Applications must contain a budget for each budget period for the entire duration of the proposed project. Annual and cumulative budgets are required.

☼ *For Integrated Project Applications* – Projects must budget sufficient resources to carry out the proposed set of research, education, and/or extension activities that will lead to the desired outcomes. No more than two-thirds of a project's budget may be focused on a single component. Projects that include partnering with eXtension must include financial support for the Community of Practice core functions as well as project-specific activities.

☼ *For Conference Grant Applications* – The budget for the conference may include an appropriate amount for transportation and subsistence costs for participants and for other conference-related costs. Conference awards are not expected to exceed \$50,000 and are not renewable. Indirect costs are not permitted on Conference Grant awards. Include an itemized breakdown of all support requested from the AFRI in the Budget Justification (Field K. of the R&R Budget).

☼ *For Sabbatical Grant Applications* – Limit to one year's salary and funds for travel and supplies.

☼ *For Seed Grant Applications* – These awards will be limited to a total of \$150,000 (including indirect costs) for two years and are not renewable.

☼ *For Equipment Grant Applications* – Each request shall be limited to one major piece of equipment within the cost range of \$10,000-\$250,000. Equipment grants are not renewable. The amount requested shall not exceed 50 percent of the cost or \$50,000, whichever is less. Unless waived, it is the responsibility of the PD to secure the required matching funds with non-Federal funds (see Part III, C for more information). No installation, maintenance, warranty, or insurance expenses may be paid from these awards, nor may these costs be part of the matching funds. Indirect costs are not permitted on Equipment Grant awards.

- b. **Field C. Equipment** – Regular Equipment item - Equipment is defined as an item of property that has an acquisition cost of \$5,000 or more (unless the organization has established lower levels) and an expected service life of more than one year. List each item of equipment separately and justify each in the budget justification section. Allowable items ordinarily will be limited to research equipment and apparatus not already available for the conduct of the work. General-purpose equipment, such as a personal computer, is not eligible for support unless primarily or exclusively used in the actual conduct of scientific research.
- c. **Field D. Travel** – If a project is funded, the PD is required to attend an annual investigator meeting (excluding Exploratory Research, Conference, Sabbatical and Equipment Grant applications). Seed Grant applicants are required to attend beginning in the second year of funding. CARE awardees are required to attend an investigator meeting once during the life of the award. Reasonable travel expenses should be included as part of the project budget.
- d. **Field H. Indirect Costs** – NIFA is prohibited from paying indirect costs exceeding 30 percent of the total Federal funds provided under each award. This limitation is equivalent to 0.42857 of the total direct costs of an award. See Part IV, E for additional information. **Subcontracts are allowed indirect costs only if the organization has a negotiated rate agreement with a cognizant federal audit agency. Indirect costs are not permitted on Conference Grant or Equipment Grant awards.**
- e. **Field K. Budget Justification – PDF Attachment. No Page Limit.** Title the attachment as 'Budget Justification' in the document header and save file as 'BudgetJustification'.

All cumulative budget categories, with the exception of Indirect Costs, for which support is requested must be individually listed (with costs) in the same order as the cumulative budget. NOTE: For continuation awards, all budget categories for year one must also be fully justified. If consulting, collaborative, or subcontractual arrangements are included in the application, these arrangements should be fully explained and justified. The rate of pay for any consultant must be included, if known at the time of application. Please include a cost breakdown for the consultant, including the number of days in service, travel, and per diem, as well as the rate of pay. Letters of consent or collaboration and other evidence should be provided in the Documentation of Collaboration to show that collaborators have agreed to participate. A proposed statement of work, biographical sketch, and a budget for each arrangement involving the transfer of substantive programmatic work or the provision of financial assistance to a third party must be supplied. In multi-institutional applications, a budget and budget narrative must be included for each institution involved. The lead institution and each participating institution must be identified.

☀ *For Integrated Project Applications* – Each function should be represented by one or more objectives within the application. Projects must budget sufficient resources to carry out the proposed set of research, education, and/or extension activities that will lead to the desired outcomes. No more than two-thirds of a project's budget may be focused on a single component.

☀ *For Equipment Grant Applications* – The Budget Justification should describe the instrument requested including the manufacturer and model number, if known; provide a detailed budget breakdown of the equipment and accessories required; and indicate the amount of funding requested from USDA for each component of equipment requested. A letter signed by the institution's AR stating that the necessary non-Federal matching funds will be made available from an institutional or other source is required. An institution that believes it is eligible for the waiver of the matching funds should include a letter stating and documenting the eligibility that is signed by the institution's AR (see Table 2 following Part VIII for eligibility). A justification must be given for how this equipment will strengthen the applicant's research program or institution.

#### **f. Subcontract Arrangements**

If it will be necessary to enter into a formal subcontract agreement with another institution, financial arrangements must be detailed in the "R&R Subaward Budget Attachment(s) Form." Annual and cumulative budgets, budget justification and a letter of commitment signed by the Authorized Representative (AR) are required for each subcontract agreement. Refer to Part V, 8. of the NIFA Grants.gov Application Guide for instructions on completing this form.

#### **g. Matching**

If a funded project is commodity-specific and not of national scope, the grant recipient is required to match the USDA funds awarded on a dollar-for-dollar basis from non-Federal sources with cash and/or in-kind contributions.

The sources and the amount of all matching support from outside the applicant organization should be summarized on a separate page and placed in the application immediately following the Budget Justification. All pledge agreements must be placed in the application immediately following the summary of matching support.

The value of applicant contributions to the project shall be established in accordance with applicable cost principles. Applicants should refer to OMB Circular A-21 (2 CFR Part 220), Cost Principles for Educational Institutions, for further guidance and other requirements relating to matching and allowable costs.

☀ *For Equipment Grant Applications* – **Equipment Grants** requiring matching funds, as specified in Part III, C., must include a letter in the budget justification signed by the institution's AR stating that the necessary non-Federal matching funds will be made available from the institution or other source. The amount of Federal funds provided may not exceed 50 percent of the cost of the equipment acquired using funds from the grant, or \$50,000, whichever is less. Grantees are required to match 100% of federal funds awarded from non-Federal sources. If the institution believes it is eligible for the waiver for matching funds (see Part III, C. for waiver eligibility), the budget justification must include a letter signed by the institution's AR stating this information. NIFA will consider this justification when ascertaining final matching requirements or in determining if required matching can be waived. NIFA retains the right to make final determinations regarding matching requirements.

### **7. Supplemental Information Form**

Information related to the questions on this form is dealt with in detail in Part VI, 1. of the NIFA Grants.gov Application Guide.

**a. Field 2. Program to which you are applying** – Enter the Program (Area Priority) Code Name and the Program (Area Priority) Code for the Program Area Priority to which you are applying from

the information provided in the Program Area Descriptions beginning in Part I, C. An application can only be submitted to one program (Area Priority). It is extremely important that the Program (Area Priority) Code Name and Program (Area Priority) Code are spelled correctly and match this RFA. If you have a question about which topic area is appropriate for your application, please contact the Program Area Priority Contact.

**b. Field 8. Conflict of Interest List – PDF Attachment. No Page Limit.** Title the attachment as 'Conflict of Interest' in the document header and save file as 'ConflictOfInterest'. See Part VI, 1.8 of the NIFA Grants.gov Application Guide for further instructions.

A Conflict of Interest List is required for all applications submitted to the AFRI. The Conflict of Interest List should be provided as a separate PDF attachment and not included in the vitae or resume. A Conflict of Interest List must be completed individually for all personnel who have submitted a Biographical Sketch in the R&R Senior/Key Personnel Profile. **Collate all individual Conflict of Interest lists into a single document file.** The lists can only be submitted as a single PDF attachment.

A recommended template for the Conflict of Interest List can be found at:  
[www.nifa.usda.gov/funding/templates/conflict\\_of\\_interest.doc](http://www.nifa.usda.gov/funding/templates/conflict_of_interest.doc).

☼ *For Equipment Grant Applications* – Conflict of Interest list for the Equipment Grant applicant and other major users of the equipment must be completed.

#### **D. Submission Dates and Times**

1. Letter of Intent

Letter of intent must be received by NIFA by 5:00 p.m. ET on the dates indicated in the Program Area Descriptions beginning in Part I, C.

2. Full Application

A Letter of Intent is a prerequisite (except for conference grants) to submission of an application. Any application (conference grants excluded) submitted without an accepted Letter of Intent will not be reviewed.

**Instructions for submitting an application are included in Part IV, Section 1.9 of the NIFA Grants.gov Application Guide.**

Electronic applications must be received by Grants.gov by 5:00 p.m. Eastern Time on the dates indicated in the Program Area Descriptions beginning in Part I, C. **Applications received after the applicable deadlines will not be reviewed.**

**If you have trouble submitting an application to Grants.gov, you should FIRST contact the Grants.gov Help Desk to resolve any problems. Keep a record of any such correspondence. See Part IV. A. for Grants.gov contact information.**

We send email correspondence to the AR regarding the status of submitted applications (see Part IV. C.). Therefore, applicants are strongly encouraged to provide accurate e-mail addresses, where designated, on the SF-424 R&R Application for Federal Assistance.

If the AR has not received correspondence **from NIFA** regarding a submitted application within 30 days of the established deadline, please contact the Program Contact identified in Part VII of the applicable RFA and request the proposal number assigned to the application. **Failure to do so may result in the application not being considered for funding by the peer review panel. Once the application has been assigned a proposal number, this number should be cited on all future correspondence.**

#### **E. Funding Restrictions**

Section 718 of the Consolidated and Further Continuing Appropriations Act, 2013 (Pub. L. 113-6) limited indirect costs to 30 percent of the total Federal funds provided under each award. Similar language may

be included in the FY 2014 appropriation, therefore, when preparing budgets, you should limit your request for the recovery of indirect costs to the lesser of your institution's official negotiated indirect cost rate or the equivalent of 30 percent of total Federal funds awarded.

If your institution does not have, or cannot obtain, a negotiated rate, you must calculate an indirect cost rate in order to request indirect costs. You should calculate an indirect cost rate based on actual costs for the entire organization from the most recently completed accounting year. If no prior cost history exists, you should use budgeted costs for the entire organization. You should follow the example(s) found at: [http://nifa.usda.gov/business/indirect\\_cost\\_process.html](http://nifa.usda.gov/business/indirect_cost_process.html) for information regarding this process. You may elect not to charge indirect costs and, instead, use all grant funds for direct costs. If indirect costs are not charged, the phrase "None requested" should be written in this space.

Funds made available for grants under the AFRI program shall not be used for the construction of a new building or facility or the acquisition, expansion, remodeling, or alteration of an existing building or facility (including site grading and improvement, and architect fees).

## **F. Other Submission Requirements**

### **1. Successful Application Submission**

You should follow the submission requirements noted in Part IV, section 1.9 in the document entitled "NIFA Grants.gov Application Guide."

### **2. Application Status**

For information about the **status of a submitted application**, see Part III., section 6. of the NIFA Grants.gov Application Guide.

### **3. Multiple Submissions**

In accordance with Part III, section 5 of the NIFA Grants.gov Application Guide, duplicate, essentially duplicate or predominantly overlapping applications submitted to one or more program areas within the AFRI (including FASE Grants) in any one fiscal year will not be reviewed. In addition, applicants may not submit to AFRI an application that is considered duplicate, essentially duplicate, or predominantly overlapping with an application submitted to another NIFA program in the same fiscal year.

## **PART V – APPLICATION REVIEW REQUIREMENTS**

### **A. General**

We evaluate the application in a 2-part process. First, we screen each application to ensure that it meets the administrative requirements as set forth in this RFA. Applications that do not fall within the guidelines, as stated in the RFA, will not be considered for funding. Second, a review panel will technically evaluate applications that meet the RFA requirements. In addition to the review panel, written comments will be solicited from *ad hoc* reviewers when necessary. Prior to recommending an application for funding, the peer review panel and *ad hoc* reviewer comments will be presented and discussed by the peer review panel.

We select reviewers based upon their training and experience in relevant scientific, extension, or education fields, taking into account the following factors: (a) The level of relevant formal scientific, technical education, or extension experience of the individual, as well as the extent to which an individual is engaged in relevant research, education, or extension activities; (b) the need to include as reviewers experts from various areas of specialization within relevant scientific, education, or extension fields; (c) the need to include as reviewers other experts (e.g., producers, range or forest managers/operators, and consumers) who can assess relevance of the applications to targeted audiences and to program needs; (d) the need to include as reviewers experts from a variety of organizational types (e.g., colleges, universities, industry, state and federal agencies, and private profit and non-profit organizations) and geographic locations; (e) the need to maintain a balanced composition of reviewers with regard to minority and female representation and an equitable age distribution; and (f) the need to include reviewers who can judge the effective usefulness to producers and the general public of each application.

For more information on the peer review process, see [www.nifa.usda.gov/business/competitive\\_peer\\_review.html](http://www.nifa.usda.gov/business/competitive_peer_review.html).

### **B. Evaluation Criteria**

Projects supported under this program shall be designed, among other things, to accomplish one or more of the purposes of agriculture research, education, and extension, subject to the varying conditions and needs of States. Therefore, in carrying out its review, the peer review panel will take into account the following factors.

#### **1. Research Project Applications**

These evaluation criteria will be used for the review of all single-function Research Project applications.

##### **a. Scientific Merit of the Application for Research**

- 1) Novelty, innovation, uniqueness, and originality;
- 2) Where model systems are used, ability to transfer knowledge gained from these systems to organisms of importance to U.S. agriculture;
- 3) Conceptual adequacy of the research and suitability of the hypothesis, as applicable;
- 4) Clarity and delineation of objectives;
- 5) Adequacy of the description of the undertaking and suitability and feasibility of methodology;
- 6) Demonstration of feasibility through preliminary data; and
- 7) Probability of success of the project is appropriate given the level of scientific originality, and risk-reward balance.

##### **b. Qualifications of Project Personnel, Adequacy of Facilities, and Project Management**

- 1) Qualifications of applicant (individual or team) to conduct the proposed project, including performance record and potential for future accomplishments;
- 2) Demonstrated awareness of previous and alternative approaches to the problem identified in the application;
- 3) Institutional experience and competence in subject area;

- 4) Adequacy of available or obtainable support personnel, facilities, and instrumentation; and
- 5) Planning and administration of the proposed project, including: time allocated for systematic attainment of objectives; and planned administration of the proposed project and its maintenance, partnerships, collaborative efforts, and the planned dissemination of information for multi-institutional projects over the duration of the project.

**c. Project Relevance**

- 1) Documentation that the research is directed toward specific Program Area Priority identified in this RFA and is designed to accelerate progress toward the productivity and economic, environmental, and social sustainability of U.S. agriculture with respect to natural resources and the environment, human health and well-being, and communities.

**2. Integrated Project Applications**

These evaluation criteria will be used for the review of all multi-function Integrated Project applications.

**a. Merit of the Application for Science Research, Education, and/or Extension**

- 1) Project objectives and outcomes are clearly described, adequate, and appropriate. All project components (i.e., research, education, extension) – at least two are required – are reflected in one or more project objectives;
- 2) Proposed approach, procedures, or methodologies are innovative, original, clearly described, suitable, and feasible;
- 3) Expected results or outcomes are clearly stated, measurable, and achievable within the allotted time frame;
- 4) Proposed research fills knowledge gaps that are critical to the development of practices and programs to address the stated problem or issue;
- 5) Proposed extension leads to measurable, documented changes in learning, actions, or conditions in an identified audience or stakeholder group; and
- 6) Proposed education (teaching) has an impact upon and advances the quality of food and agricultural sciences by strengthening institutional capacities and curricula to meet clearly delineated needs and train the next generation of scientists and educators.

**b. Qualifications of Project Personnel, Adequacy of Facilities, and Project Management**

- 1) Roles of key personnel are clearly defined;
- 2) Key personnel have sufficient expertise to complete the proposed project, and where appropriate, partnerships with other disciplines (e.g., social science or economics) and institutions are established;
- 3) Evidence of institutional capacity and competence in the proposed area of work is provided;
- 4) Support personnel, facilities, and instrumentation are sufficient;
- 5) A clear plan is articulated for project management, including time allocated for attainment of objectives and delivery of products, maintenance of partnerships and collaborations, and a strategy to enhance communication, data sharing, and reporting among members of the project team; and
- 6) The budget clearly allocates sufficient resources to carry out a set of research, education (teaching), and/or extension activities that will lead to desired outcomes, with no more than two-thirds of the budget focused on a single project component. Supporting funds for Community of Practice core functions and project-specific activities are included for partnerships with eXtension.

**c. Project Relevance**

- 1) Documentation that the project is directed toward specific Program Area Priority identified in this RFA and is designed to accelerate progress toward the productivity and economic, environmental, and social sustainability of U.S. agriculture with respect to natural resources and the environment, human health and well-being, and communities;
- 2) Project components (research, education, and/or extension) – at least two are required – are fully integrated and necessary to address the problem or issue;

- 3) The proposed work addresses identified stakeholder needs;
- 4) Stakeholder involvement in project development, implementation, and evaluation is demonstrated, where appropriate;
- 5) Plan and methods for evaluating success of project activities and documenting potential impact against measurable short and mid-term outcomes are suitable and feasible;
- 6) For extension or education (teaching) activities, curricula and related products will sustain education or extension functions beyond the life of the project; and
- 7) For extension or education (teaching) activities, the resulting curricula or products share information and recommendations based on knowledge and conclusions from a broad range of research initiatives.

### 3. **Conference Grant Applications**

- a. Relevance of the proposed conference to agriculture and food systems in the U.S. and appropriateness of the conference in fostering scientific exchange;
- b. Qualifications of the organizing committee and appropriateness of invited speakers to topic areas being covered; and
- c. Uniqueness, timeliness of the conference, and appropriateness of budget requests.

### 4. **Exploratory Research Applications**

- a. The scientific merit of the proposed activity;
- b. Appropriateness of the grant for developing proof of concept of new and untested ideas including high risk research;
- c. The applicant's previous experience and background along with the proposed activities; and
- a. Relevance of the project to sustainable U.S. agriculture, the environment, human health and well-being, and rural communities.

### 5. **Collaborative Grant Applications**

These evaluation criteria will be used for the review of all Collaborative Research Project applications.

#### a. **Scientific Merit of the Application for Research**

- 1) Novelty, innovation, uniqueness, and originality;
- 2) Where model systems are used, ability to transfer knowledge gained from these systems to organisms of importance to U.S. agriculture;
- 3) Conceptual adequacy of the research and suitability of the hypothesis, as applicable;
- 4) Clarity and delineation of objectives;
- 5) Adequacy of the description of the undertaking and suitability and feasibility of methodology;
- 6) Demonstration of feasibility through preliminary data; and
- 7) Probability of success of the project is appropriate given the level of scientific originality, and risk-reward balance.

#### b. **Qualifications of Project Personnel, Adequacy of Facilities, and Project Management**

- 1) Qualifications of applicant (individual or team) to conduct the proposed project, including performance record and potential for future accomplishments;
- 2) Demonstrated awareness of previous and alternative approaches to the problem identified in the application;
- 3) Institutional experience and competence in subject area;
- 4) Adequacy of available or obtainable support personnel, facilities, and instrumentation; and
- 5) Planning and administration of the proposed project, including: time allocated for systematic attainment of objectives; and planned administration of the proposed project and its maintenance, partnerships, collaborative efforts, and the planned dissemination of information for multi-institutional projects over the duration of the project.

#### c. **Project Relevance**

- 1) Documentation that the research is directed toward specific Program Area Priority identified in this RFA and is designed to accelerate progress toward the productivity and

economic, environmental, and social sustainability of U.S. agriculture with respect to natural resources and the environment, human health and well-being, and communities.

**d. Collaboration**

- 1) Must clearly demonstrate substantial and meaningful collaborations between the part of the application to be supported by NIFA and the other part of the work to be supported by the partner organization; and
- 2) Work to be funded by NIFA and the partner must be integral to the success of at least one of the objectives in the application.

**6. New Investigator, Strengthening Standard and Strengthening Conference Grant Applications**

Refer to the review criteria listed above for the applicable Project Type (Research, Extension or Integrated) to which you are applying.

**7. Sabbatical Grant, Equipment Grant, and Seed Grant Applications**

- a. The merit of the proposed activities or equipment as a means of enhancing the capabilities and competitiveness of the applicant and/or institution;
- b. The applicant's previous experience and background along with the appropriateness of the proposed activities or equipment for the goals proposed; and
- c. Relevance of the project to long-range improvements in and sustainability of U.S. agriculture, the environment, human health and well-being, and rural communities.

**C. Conflicts of Interest and Confidentiality**

During the peer evaluation process, we take extreme care to prevent any actual or perceived conflicts of interest that may impact review or evaluation. For the purpose of determining conflicts of interest, we determine the academic and administrative autonomy of an institution by reference to the current Higher Education Directory, published by Higher Education Publications, Inc., 1801 Robert Fulton Drive, Suite 340, Reston, VA, 20191. Phone: (888) 349-7715. Web site: [www.hepinc.com](http://www.hepinc.com).

Names of submitting institutions and individuals, as well as application content and peer evaluations, are kept confidential, except to those involved in the review process, to the extent permitted by law. In addition, the identities of peer reviewers will remain confidential throughout the entire review process, to the extent permitted by law, therefore, the names of the reviewers will not be released to applicants.

**D. Organizational Management Information**

Specific management information relating to an applicant shall be submitted on a one time basis, with updates on an as needed basis. This requirement is part of the responsibility determination prior to the award of a grant identified under this RFA, if such information has not been provided previously under this or another NIFA program. We will provide you copies of forms recommended for use in fulfilling these requirements as part of the preaward process. Although an applicant may be eligible based on its status, as one of these entities, there are factors that may exclude an applicant from receiving federal financial and nonfinancial assistance and benefits under this program (e.g., debarment or suspension of an individual involved or a determination that an applicant is not responsible based on submitted organizational management information).

## **PART VI – AWARD ADMINISTRATION**

### **A. General**

Within the limit of funds available for such purpose, the awarding official of NIFA shall make grants to those responsible, eligible applicants whose applications are judged most meritorious under the procedures set forth in this RFA. The date specified by the awarding official of NIFA as the effective date of the grant shall be no later than September 30 of the Federal fiscal year in which the project is approved for support and funds are appropriated for such purpose, unless otherwise permitted by law. It should be noted that the project need not be initiated on the grant effective date, but as soon thereafter as practical so that project goals may be attained within the funded project period. All funds granted by NIFA under this RFA shall be expended solely for the purpose for which the funds are granted in accordance with the approved application and budget, the regulations, the terms and conditions of the award, the applicable Federal cost principles, the Department's assistance regulations (parts 3015 and 3019 of 7 CFR), and the NIFA General Awards Administration Provisions at 7 CFR part 3430, subparts A through E.

### **B. Award Notice**

The award document will provide pertinent instructions and information including, at a minimum, the following:

1. Legal name and address of performing organization or institution to whom the Director has issued an award under the terms of this RFA;
2. Title of project;
3. Name(s) and institution(s) of PDs chosen to direct and control approved projects;
4. Identifying award number assigned by NIFA;
5. Award type, specifying whether the grant is a standard or continuation award;
6. Project period, specifying the amount of time NIFA intends to support the project without requiring re-competition for funds, and that no-cost extensions of time beyond the five year performance period will be granted only in extenuating circumstances, require prior approval and will be contingent on a satisfactory merit review conducted by NIFA;
7. Total amount of financial assistance approved by the Director during the project period;
8. Legal authority(ies) under which the award is issued;
9. Appropriate Catalog of Federal Domestic Assistance (CFDA) number;
10. Applicable award terms and conditions (see [www.nifa.usda.gov/business/awards/awardterms.html](http://www.nifa.usda.gov/business/awards/awardterms.html) to view NIFA award terms and conditions);
11. Approved budget plan for categorizing allocable project funds to accomplish the stated purpose of the award; and
12. Other information or provisions deemed necessary by NIFA to carry out its respective awarding activities or to accomplish the purpose of a particular award.

### **C. Administrative and National Policy Requirements**

Several Federal statutes and regulations apply to grant applications considered for review and to project grants awarded under this program. These include, but are not limited to:

2 CFR Part 215 – Uniform Administrative Requirements for Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations (OMB Circular A-110).

2 CFR Part 220 – Cost Principles for Educational Institutions (OMB Circular A-21).

2 CFR Part 225 – Cost Principles for State, Local, and Indian Tribal Governments (OMB Circular A-87).

2 CFR Part 230 – Cost Principles for Non-Profit Organizations (OMB Circular A-122).

7 CFR Part 1, subpart A – USDA implementation of the Freedom of Information Act.

7 CFR Part 3 – USDA implementation of OMB Circular No. A-129 regarding debt collection.

7 CFR Part 15, subpart A – USDA implementation of Title VI of the Civil Rights Act of 1964, as amended.

7 CFR Part 331 and 9 CFR Part 121 – USDA implementation of the Agricultural Bioterrorism Protection Act of 2002.

7 CFR Part 3015 – USDA Uniform Federal Assistance Regulations, implementing OMB directives (i.e., OMB Circular Nos. A-21 and A-122, now codified at 2 CFR Parts 220 and 230) and incorporating provisions of 31 U.S.C. 6301-6308 (formerly the Federal Grant and Cooperative Agreement Act of 1977, Pub. L. No. 95-224), as well as general policy requirements applicable to recipients of Departmental financial assistance.

7 CFR Part 3016 – USDA Implementation of Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments.

7 CFR Part 3017 – USDA implementation of Governmentwide Debarment and Suspension (Nonprocurement) and 7 CFR Part 3021—Governmentwide Requirements for Drug Free Workplace (Grants).

7 CFR Part 3018 – USDA implementation of Restrictions on Lobbying. Imposes prohibitions and requirements for disclosure and certification related to lobbying on recipients of Federal contracts, grants, cooperative agreements, and loans.

7 CFR Part 3019 – USDA implementation of OMB Circular A-110, Uniform Administrative Requirements for Grants and Other Agreements With Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations.

7 CFR Part 3021 – Governmentwide Requirements for Drug Free Workplace (Grants)

7 CFR Part 3022 —Research Institutions Conducting USDA-Funded Extramural Research; Research Misconduct.

7 CFR Part 3052 – USDA implementation of OMB Circular No. A-133, Audits of States, Local Governments, and Nonprofit Organizations.

7 CFR Part 3407 – NIFA procedures to implement the National Environmental Policy Act of 1969, as amended.

7 CFR Part 3430 – NIFA Competitive and Noncompetitive Nonformula Grant Programs—General Grant Administrative Provisions.

29 U.S.C. 794 (section 504, Rehabilitation Act of 1973) and 7 CFR Part 15b (USDA implementation of statute) – prohibiting discrimination based upon physical or mental handicap in Federally assisted programs.

35 U.S.C. 200 et seq. – Bayh Dole Act, controlling allocation of rights to inventions made by employees of small business firms and domestic nonprofit organizations, including universities, in Federally assisted programs (implementing regulations are contained in 37 CFR Part 401).

#### **D. Expected Program Outputs and Reporting Requirements**

Grantees are to submit initial project information and annual summary reports to NIFA's electronic, Web-based inventory system that facilitates both grantee submissions of project outcomes and public access

to information on Federally-funded projects. The details of these reporting requirements are included in the award terms and conditions. Details of annual and final technical reporting requirements are also included in the award terms and conditions

For informational purposes, the "Federal Financial Report," Form SF-425, consolidates into a single report the former Financial Status Report (SF-269 and SF-269A) and the Federal Cash Transactions Report (SF-272 and SF-272A). The NIFA Agency-specific Terms and Conditions include the requirement that Form SF-425 is due on an annual basis no later than 90 days following the award's anniversary date (i.e., one year following the month and day of which the project period begins and each year thereafter up until a final report is required). A final "Federal Financial Report," Form SF-425, is due 90 days after the expiration date of this award.

## PART VII – AGENCY CONTACTS

For general questions related to the AFRI Programs, applicants and other interested parties are encouraged to contact:

AFRI Program Office:

Mr. Brad Rein, Acting Assistant Director, Institute of Bioenergy, Climate, and Environment

Dr. Robert E. Holland, Assistant Director, Institute of Food Safety and Nutrition

Dr. Muquarrab Qureshi, Assistant Director, Institute of Youth, Family, and Community

Dr. Deborah Sheely, Assistant Director, Institute of Food Production and Sustainability

Telephone: (202) 401-5022

Fax: (202) 401-6488

E-mail: [AFRI@nifa.usda.gov](mailto:AFRI@nifa.usda.gov)

Specific questions pertaining to technical matters may be directed to the appropriate Program Area Contacts:

Program Area	Program Area Contact:
Plant Health and Production and Plant Products	Dr. Michael Bowers (202) 401-4510; <a href="mailto:mbowers@nifa.usda.gov">mbowers@nifa.usda.gov</a> Dr. Ann Marie Thro (202) 401-6702; <a href="mailto:athro@nifa.usda.gov">athro@nifa.usda.gov</a> Dr. Shing Kwok (202) 401-6060; <a href="mailto:skwok@nifa.usda.gov">skwok@nifa.usda.gov</a> Dr. Ann Lichens-Park (202) 401-6460; <a href="mailto:apark@nifa.usda.gov">apark@nifa.usda.gov</a> Dr. Liang-Shiou Lin (202) 401-5045; <a href="mailto:llin@nifa.usda.gov">llin@nifa.usda.gov</a> Dr. Mary Purcell-Miramontes (202) 401-5168; <a href="mailto:mpurcell@nifa.usda.gov">mpurcell@nifa.usda.gov</a>
Animal Health and Production and Animal Products	Dr. Margo Holland (202) 401-5044; <a href="mailto:mholland@nifa.usda.gov">mholland@nifa.usda.gov</a> Dr. Peter Johnson (202) 401-1896; <a href="mailto:pjohnson@nifa.usda.gov">pjohnson@nifa.usda.gov</a> Dr. Lakshmi Kumar Matukumalli (202) 401-1766; <a href="mailto:lmatumalli@nifa.usda.gov">lmatumalli@nifa.usda.gov</a> Dr. Mark Mirando (202) 401-4336; <a href="mailto:mmirando@nifa.usda.gov">mmirando@nifa.usda.gov</a> Dr. Steven Smith (202) 401-6134; <a href="mailto:sismith@nifa.usda.gov">sismith@nifa.usda.gov</a>
Food Safety, Nutrition, and Health	Dr. Jeanette Thurston (202) 720-7166; <a href="mailto:jthurston@nifa.usda.gov">jthurston@nifa.usda.gov</a> Dr. Deirdra Chester (202) 401-5178; <a href="mailto:dncchester@nifa.usda.gov">dncchester@nifa.usda.gov</a> Dr. Jodi Williams (202) 720-6145; <a href="mailto:jwilliams@nifa.usda.gov">jwilliams@nifa.usda.gov</a>
Renewable Energy, Natural Resources, and Environment	Dr. Jill Auburn (202)-720-2635 or <a href="mailto:jauburn@nifa.usda.gov">jauburn@nifa.usda.gov</a> Dr. Michael Bowers (202) 401-4510; <a href="mailto:mbowers@nifa.usda.gov">mbowers@nifa.usda.gov</a> Dr. Ray Knighton (202) 401-6417; <a href="mailto:rknighton@nifa.usda.gov">rknighton@nifa.usda.gov</a>
Agriculture Systems and Technology	Dr. Hongda Chen (202) 401-6497; <a href="mailto:hchen@nifa.usda.gov">hchen@nifa.usda.gov</a> Ms. Charlotte Kirk Baer (202) 720-5280 or <a href="mailto:cbaer@nifa.usda.gov">cbaer@nifa.usda.gov</a> Dr. Mervalin Morant (202) 401-6602 or <a href="mailto:mmorant@nifa.usda.gov">mmorant@nifa.usda.gov</a> Dr. Daniel Schmoldt (202) 720-4807; <a href="mailto:dschmoldt@nifa.usda.gov">dschmoldt@nifa.usda.gov</a>
Agriculture Economics and Rural Communities	Dr. Jill Auburn (202)-720-2635 or <a href="mailto:jauburn@nifa.usda.gov">jauburn@nifa.usda.gov</a> Dr. Denis Ebodaghe (202) 401-4385 or <a href="mailto:debodaghe@nifa.usda.gov">debodaghe@nifa.usda.gov</a> Dr. Fen Hunt (202) 720-4114 or <a href="mailto:fhunt@nifa.usda.gov">fhunt@nifa.usda.gov</a> Dr. Robbin Shoemaker (202) 720 - 5468; <a href="mailto:rshoemaker@nifa.usda.gov">rshoemaker@nifa.usda.gov</a>
Critical Agricultural Research and Extension	Dr. Martin Draper (202) 401-1990; <a href="mailto:mdraper@nifa.usda.gov">mdraper@nifa.usda.gov</a>
Exploratory	Dr. Michael Bowers (202) 401-4510; <a href="mailto:mbowers@nifa.usda.gov">mbowers@nifa.usda.gov</a>

## **PART VII – OTHER INFORMATION**

### **A. Access to Review Information**

We will send copies of reviews, not including the identity of reviewers, and a summary of the panel comments to the applicant PD after the review process has been completed.

### **B. Use of Funds; Changes**

#### **1. Delegation of Fiscal Responsibility**

Unless the terms and conditions of the grant state otherwise, the grantee may not, in whole or in part, delegate or transfer to another person, institution, or organization the responsibility for use or expenditure of grant funds.

#### **2. Changes in Project Plans**

a. The permissible changes by the awardee, PD(s), or other key project personnel in the approved project shall be limited to changes in methodology, techniques, or other similar aspects of the project to expedite achievement of the project's approved goals. If the awardee or the PD(s) is uncertain as to whether a change complies with this provision, the question must be referred to the Authorized Departmental Officer (ADO) for a final determination. The ADO is the signatory of the award document, not the program contact.

b. The awardee must request, and the ADO must approve in writing, all changes in approved goals or objectives prior to effecting such changes. In no event shall requests be approved for changes that are outside the scope of the original approved project.

c. The awardee must request, and the ADO must approve in writing, all changes in approved project leadership or the replacement or reassignment of other key project personnel, prior to effecting such changes.

d. The awardee must request, and the ADO must approve in writing, all transfers of actual performance of the substantive programmatic work in whole or in part and provisions for payment of funds, whether or not federal funds are involved, prior to effecting such transfers, unless prescribed otherwise in the terms and conditions of the award.

e. The project period may be extended without additional financial support, for such additional period(s) necessary to complete or fulfill the purposes of an approved project, but in no case shall the total project period exceed any applicable statutory limit or expiring appropriation limitation. The terms and conditions of award include information about no-cost extensions of the award and when ADO's prior approval is necessary.

f. Changes in Approved Budget: Unless stated otherwise in the terms and conditions of award, changes in an approved budget must be requested by the awardee and approved in writing by the ADO prior to instituting such changes, if the revision will involve transfers or expenditures of amounts requiring prior approval as set forth in the applicable Federal cost principles, Departmental regulations, or award.

### **C. Confidential Aspects of Applications and Awards**

When an application results in an award, it becomes a part of the record of NIFA transactions, available to the public upon specific request. Information that the Secretary determines to be of a confidential, privileged, or proprietary nature will be held in confidence to the extent permitted by law. Therefore, any information that the applicant wishes to have considered as confidential, privileged, or proprietary should be clearly marked within the application. Such an application will be released only with the consent of the applicant or to the extent required by law. The original electronic application that does not result in an

award will be retained by the Agency for a period of three years. Other copies will be destroyed. An application may be withdrawn at any time prior to the final action thereon.

#### **D. Regulatory Information**

For the reasons set forth in the final Rule-related Notice to 7 CFR Part 3015, subpart V (48 FR 29114, June 24, 1983), this program is excluded from the scope of the Executive Order 12372 which requires intergovernmental consultation with State and local officials. Under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 35), the collections of information requirements contained in this Notice have been approved under OMB Document No. 0524-0039.

#### **E. Application Disposition**

When each peer review panel has completed its deliberations, the responsible program staff of AFRI will recommend that the project: (a) be approved for support from currently available funds or (b) be declined due to insufficient funds or unfavorable review.

AFRI reserves the right to negotiate with the PD and/or with the submitting organization or institution regarding project revisions (e.g., reductions in the scope of work, funding level, period, or method of support) prior to recommending any project for funding.

An application may be withdrawn at any time before a final funding decision is made regarding the application; however, withdrawn applications normally will not be returned. One copy of each application that is not selected for funding, including those that are withdrawn, will be retained by AFRI for a period of three years.

#### **F. Materials Available on the Internet**

AFRI program information will be made available on the NIFA Web site: [www.nifa.usda.gov/funding/afri/afri.html](http://www.nifa.usda.gov/funding/afri/afri.html). The following are among the materials available on the AFRI More Information Page:

1. More information about upcoming AFRI 2014 Requests for Applications
2. AFRI Abstracts of Funded Projects
3. AFRI Annual Reports

#### **G. Electronic Subscription to AFRI Announcements**

If you would like to receive notifications of all new announcements pertaining to AFRI RFA, you can register via Grants.gov at [www.grants.gov/search/subscribeAdvanced.do](http://www.grants.gov/search/subscribeAdvanced.do).

- Enter the e-mail address at which you would like to receive the announcements
- Enter "10.310" for *CFDA Number*
- Select "Subscribe to Mailing List"

Other criteria may be selected; however, your e-mail address and the CFDA number are the only data required to receive AFRI announcements. You do not need to be a registered user of Grants.gov to use this service. You may modify your subscriptions or unsubscribe at any time.

## H. Definitions

Please refer to [7 CFR 3430, Competitive and Noncompetitive Non-formula Grant Programs--General Grant Administrative Provisions](#) for the applicable definitions for this NIFA Grant Program.

For the purpose of this program, the following additional definitions are applicable:

Director means the Director of the National Institute of Food and Agriculture (NIFA) and any other officer or employee of NIFA to whom the authority involved is delegated.

Food and Agricultural Science Enhancement (FASE) Grants mean funding awarded to eligible applicants to strengthen science capabilities of Project Directors, to help institutions develop competitive scientific programs, and to attract new scientists into careers in high-priority areas of National need in agriculture, food, and environmental sciences. FASE awards may apply to any of the three agricultural knowledge components (i.e., research, education, and extension). FASE awards include Pre- and Postdoctoral Fellowships, New Investigator grants, and Strengthening grants.

Integrated project means a project incorporating two or three functions of the agricultural knowledge system (research, education, and extension) around a problem or activity.

Limited institutional success means institutions that are not among the most successful universities and colleges for receiving Federal funds for science and engineering research. A list of successful institutions will be provided in the RFA.

Minority-serving institution means an accredited academic institution whose enrollment of a single minority or a combination of minorities exceeds fifty percent of the total enrollment, including graduate and undergraduate and full- and part-time students. An institution in this instance is an organization that is independently accredited as determined by reference to the current version of the Higher Education Directory, published by Higher Education Publications, Inc., 6400 Arlington Boulevard, Suite 648, Falls Church, Virginia 22042.

Minority means Alaskan Native, American Indian, Asian-American, African-American, hispanic-American, Native Hawaiian, or Pacific Islander. The Secretary will determine on a case-by-case basis whether additional groups qualify under this definition, either at the Secretary's initiative, or in response to a written request with supporting explanation.

Multidisciplinary project means a project on which investigators from two or more disciplines collaborate to address a common problem. These collaborations, where appropriate, may integrate the biological, physical, chemical, or social sciences.

Small and mid-sized institutions are academic institutions with a current total enrollment of 17,500 or less including graduate and undergraduate and full- and part-time students. An institution, in this instance, is an organization that possesses a significant degree of autonomy. Significant degree of autonomy is defined by being independently accredited as determined by reference to the current version of the *Higher Education Directory*, published by Higher Education Publications, Inc., 6400 Arlington Boulevard, Suite 648, Falls Church, Virginia 22042 (703-532-2300).

Strengthening Grants mean funds awarded to institutions eligible for FASE Grants to enhance institutional capacity, with the goal of leading to future funding in the project area, as well as strengthening the competitiveness of the investigator's research, education, and/or extension activities. Strengthening grants consist of Standard and Coordinated Agricultural Project Grant types as well as Seed Grants, Equipment Grants, and Sabbatical Grants.

USDA EPSCoR States (Experimental Program for Stimulating Competitive Research) means States which have been less successful in receiving funding from AFRI, having a funding level no higher than the 38th percentile of all States based on a 3-year average of AFRI funding levels, excluding FASE

Strengthening funds granted to state agricultural experiment stations and degree-granting institutions in EPSCoR States and small, mid-sized, and minority-serving degree-granting institutions. The most recent list of USDA EPSCoR States is provided in this RFA.

**TABLE 1. Most Successful Universities and Colleges Receiving Federal Funds\*.**

Use to Determine Eligibility for Strengthening Grants

Arizona State University (all campuses)	Princeton University	University Maryland, College Park
Baylor College of Medicine	Purdue University (all campuses)	University Massachusetts, Amherst
Boston University	Rutgers, The State University New Jersey (all campuses)	University Massachusetts, Worcester
Brown University	Scripps Research Institute, The	University Miami
California Institute of Technology	Stanford University	University Miami (all campuses)
Carnegie Mellon University	State University of New York, Stony Brook (main campus)	University Minnesota (all campuses)
Case Western Reserve University	Texas A&M University (main campus)	University Missouri, Columbia
Colorado State University	Tufts University	University New Mexico (all campuses)
Columbia University	University Alabama, Birmingham	University North Carolina, Chapel Hill
Consortium for Ocean Leadership	University Alaska, Fairbanks	University of Medicine & Dentistry New Jersey
Cornell University (all campuses)	University Arizona	University Pennsylvania
Dartmouth College	University California, Berkeley	University Pittsburgh (all campuses)
Duke University	University California, Davis	University Rochester
Emory University	University California, Irvine	University South Florida
Florida State University	University California, Los Angeles	University Southern California
George Washington University, The	University California, San Diego	University Texas, Austin
Georgia Institute of Technology (all campuses)	University California, San Francisco	University Texas Health Science Center, Houston
Harvard University	University California, Santa Barbara	University Texas Health Science Center, San Antonio
Indiana University - Purdue University, Indianapolis	University Chicago	University Texas M. D. Anderson Cancer Center
Iowa State University	University Cincinnati (all campuses)	University Texas Medical Branch
Johns Hopkins University, The	University Colorado (all campuses)	University Texas Southwestern Medical Center
Louisiana State University (all campuses)	University Connecticut (all campuses)	University Utah
Massachusetts Institute of Technology	University Corporation for Atmospheric Research	University Virginia (main campus)
Medical College, Wisconsin	University Delaware	University Washington
Medical University, South Carolina	University Florida	University Wisconsin, Madison
Miami State University	University Georgia	Vanderbilt University
Mount Sinai School of Medicine	University Hawaii, Manoa	Virginia Commonwealth University
New York University	University Illinois, Chicago	Virginia Polytechnic Institute and State University
North Carolina State University	University Illinois, Urbana-Champaign	Wake Forest University
Northwestern University	University Iowa	Washington University, St. Louis
Ohio State University (all campuses)	University Kansas (all campuses)	Woods Hole Oceanographic Institution
Oregon Health & Science University	University Kentucky (all campuses)	Yale University
Oregon State University	University Maryland, Baltimore	Yeshiva University
Pennsylvania State University (all campuses)		

\*Data obtained from the table of Federal obligations for science and engineering research and development to the 100 universities and colleges receiving the largest amounts, ranked by total amount received in FY 2009 of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions (National Science Foundation). Campuses that are part of a larger university system as listed in Table 1 may petition for an exemption to this rule (see Part III, B for information).

**TABLE 2. Lowest One Third of Universities and Colleges Receiving Federal Funds\*.**

Use to Determine Eligibility for Possible Waiver of Matching Funds Requirement for Equipment Grants

A. T. Still University of Health Sciences	Hendrix College	Regis University
Abilene Christian University	HI Pacific University	Rhodes College
Agnes Scott College	Highline Community College	RI College
AK Pacific University	Hinds Community College	Ridgewater College
Albright College	Hood College	Roanoke College
Allegheny College	Houston Community College	Rocky Mountain College
American Indian Higher Ed. Consortium	Hudson Valley Community College	Rollins College
American University Puerto Rico	IL College of Optometry	Roosevelt University
Angelo State University	IL Wesleyan University	Saginaw Valley State University
Anne Arundel Community College	Immaculata University	Saint Augustine's College
Antioch University all campuses	IN University-Purdue University Ft. Wayne	Saint Cloud State University
AR Tech University	IN Wesleyan University	Saint Edward's University
Arapahoe Community College	Independent College Fund	Saint Lawrence University
Arizona Western College	Indian River State College	Saint Mary's College (Notre Dame, IN)
Arrowhead Community Colleges	Institute of American Indian and Alaska Native Culture and Arts Development	Saint Mary's College CA
Art Ctr. College of Design	Iona College	Saint Mary's College MD
Assumption College	Ithaca College	Saint Mary's University (San Antonio, TX)
Atlanta Metropolitan College	Ivy Tech Community College IN all campuses	Saint Mary's University MN
Atlantic College	John Brown University	Saint Michael's College
Augusta State University	John Carroll University	Saint Norbert College
Augustana College (Rock Island, IL)	Johnson & Wales University (Providence, RI)	Saint Vincent Catholic Medical Ctrs. NY
Augustana College (Sioux Falls, SD)	Juniata College	Saint Vincent College
Austin College	Kalamazoo College	Salem State University
Austin Community College	Kansas City KS Community College	Salisbury University
Avila University	Kansas City University of Medicine and Biosciences	Salve Regina University
Babson College	Kean University	San Diego Mesa College
Baker University	Keene State College	Sarah Lawrence College
Baltimore City Community College	Kenyon College	SC Sea Grant Consortium
Bard College	Knox College	Seattle Community Colleges all campuses
Bard College at Simon's Rock	Kutztown University PA	Seattle Pacific University
Bay Mills Community College	LA Universities Marine Consortium	Seminole State College
Beaufort County Community College	Lake Forest College	Seminole State College FL
Beloit College	Lake Superior State University	Shawnee State University
Benedictine University	Lakeshore Technical College	Simmons College
Bennett College	Landmark College	Skagit Valley College
Bennington College	Laramie County Community College	Slippery Rock University PA
Bentley University	Lasell College	Sojourner-Douglass College
Bethany College (Bethany, WV)	Le Moyne College	South Mountain Community College
Bethune-Cookman University	Lebanon Valley College	Southeast MO State University
Birmingham-Southern College	Lee College	Southeastern OK State University
Bismarck State College	Lehigh Carbon Community College	Southern CT State University
Bowie State University	LeMoyne-Owen College	Southern Polytechnic State University
Bridgewater State University	LeTourneau University	Southern UT University
Butler County Community College (Butler, PA)	Lewis-Clark State College	Southwest FL College

Butler University	Lock Haven University PA	Southwestern Assemblies of God University
Butte College	Longwood University	Southwestern College (Chula Vista, CA)
Cabrini College	Loras College	Southwestern Indian Polytechnic Institute
Calhoun Community College	Los Rios Community College District (all campuses)	Southwestern OK State University
Canisius College	Lyndon State College	Springfield College (Springfield, MA)
Capitol College	Lyon College	Springfield Technical Community College
Carl Albert State College	MA College of Liberal Arts	State University of New York College Old Westbury
Carroll College	Manhattan College	State University of New York College Oswego
Carroll University	Mansfield University PA	State University of New York College Potsdam
Central Arizona College	Marietta College	State University of New York Empire State College
Central College	Marist College	State University of New York Farmingdale
Central Community College	Martin University	State University of New York Fredonia
Central CT State University	Mary Baldwin College	State University of New York Institute of Technology Utica-Rome
Central OR Community College	Marygrove College	State University of New York New Paltz
Centre College	Maryville University Saint Louis	State University of New York Purchase College
Chadron State College	McNeese State University	Stevenson University
Chestnut Hill College	Mercyhurst College	Stonehill College
Christian Brothers University	Mesa State College	Suffolk University
Clarion University PA all campuses	Mesabi Range Community and Technical College	Susquehanna University
Clark State Community College	Metropolitan State College Denver	Sweet Briar College
CO College	Middle TN School of Anesthesia	Taylor University
CO State University all campuses	Mid-South Community College	Thiel College
Cochise College	Midwestern State University	Tohono O'odham Community College
Coe College	Midwestern University (Chicago, IL)	Tri-College University
College of Lake County	Millersville University PA	Troy University main campus
College of Saint Benedict	Millsaps College	Truckee Meadows Community College
College of Saint Elizabeth	Milwaukee School of Engineering	TX A&M University-Texarkana
College of Saint Scholastica	Misericordia University	TX College
College of the Atlantic	Mohave Community College	TX Wesleyan University
College Southern NV	Monmouth College	Tyler Jr. College
College Wooster	Montgomery County Community College	Union Graduate College
Columbia College (Columbia, MO)	Mountain State University	University AK System of Higher Ed.
Columbia College (Columbia, SC)	MS University for Women	University AR Monticello
Columbia College of Nursing	MT State University Billings	University Central MO
Columbus State University	MT Tech College of Technology	University Charleston
Commonwealth Medical College, The	MT University System all campuses	University Consortium for Geographic Information Science
Concord University	Mt. Saint Mary's University	University Dallas
Concordia College (Moorhead, MN)	Muhlenberg College	University Evansville
CUNY Bronx Community College	Nashville State Community College	University Hartford
CUNY Kingsborough Community College	National College of Natural Medicine	University Houston Clear Lake
Cuyahoga Community College all campuses	National-Louis University	University IL Springfield
Dakota State University	NE Indian Community College	University Indianapolis
Del Mar College	Neumann University	University Mary Washington
Dickinson State University	New England School of Acupuncture	University MD Ctr. for Environmental Science

Doane College	Nicholls State University	University MD University College
Dominican University	North GA College & State University	University ME Augusta
Drury University	North IA Area Community College	University NE Kearney
East Stroudsburg University PA	Northampton Community College	University North AL
Eastern Arizona College	Northeast Community College	University of Saint Mary
Eastern IL University	Northeast TX Community College	University of the Incarnate Word
Eastern Mennonite University	Northern MI University	University of the South
Eastern OR University	Northern WY Community College District	University Phoenix
Eastern University	Northwest FL State College	University PR, Cayey
East-West University	Northwest MO State University	University Puget Sound
Eckerd College	Northwestern Health Sciences University	University Redlands
Edison State College	Northwestern MI College	University Rio Grande
Edward Via College of Osteopathic Medicine	Northwestern OK State University	University Sagrado Corazón
El Camino College Compton Ctr.	Northwestern State University	University Tampa
Elgin Community College	NY Institute of Technology all campuses	University West GA
Elon University	NY Law School	University WI-Parkside
Emerson College	Ocean County College	University WI-River Falls
Emporia State University	OH Northern University	University WI-Whitewater
Essex County College	OH Wesleyan University	UniversityS. Naval Academy
Fairleigh Dickinson University all campuses	Orangeburg-Calhoun Technical College	VA Military Institute
Fayetteville Technical Community College	Otterbein University	Valdosta State University
Ferrum College	PA College of Technology	Victoria College
Fitchburg State University	Pace University all campuses	Viterbo University
FL State College Jacksonville	Pacific Lutheran University	VT Technical College
Florence-Darlington Technical College	Pacific States University	Wabash College
Fox Valley Technical College	Paine College	Warren Wilson College
Francis Marion University	Palau Community College	Washburn University
Franciscan University Steubenville	Pasadena City College	Washington and Lee University
Fresno City College	Pearl River Community College	Washington State Community College
Ft. Hays State University	Peninsula College	Waukesha County Technical College
Ft. Lewis College	Pepperdine University Malibu	Weber State University
GA Southwestern State University	Philadelphia College of Osteopathic Medicine	Western Carolina University
Gadsden State Community College	Philadelphia University	Western New England College
Gainesville State College	Philander Smith College	Western University of Health Sciences
Galveston College	Pikes Peak Community College	Westfield State College
Gateway Technical College	Pitzer College	Westminster College (New Wilmington, PA)
Gettysburg College	Plymouth State University	Westmont College
Gonzaga University	Polk State College	Wheaton College (Norton, MA)
Gordon College (Wenham, MA)	Portland Community College	Wheaton College (Wheaton, IL)
Goucher College	Presbyterian College	White Earth Tribal and Community College
Grand View University	Prescott College	Widener University all campuses
Greenville Technical College	Providence College	Wiley College
Hamilton College (Clinton, NY)	Quinsigamond Community College	William Carey University
Hamline University	Radford University	Winona State University
Haywood Community College	Red Rocks Community College	Wofford College
Heartland Community College	Reed College	Worcester State University

\*Data obtained from the table of Federal obligations, including American Recovery and Reinvestment Act obligations for science and engineering research and development to universities and colleges, ranked by total amount received, by agency from the FY 2009 Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions (National Science Foundation).

**FIGURE 1. Flow Chart for Strengthening Grant Eligibility.**

